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ORNITHOLOGISTS' CLUB

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JOHN J. YEALLAND

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1967

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PREFACE

ATTENDANCE at the meetings held during 1967 numbered 192 members and guests, a slight increase on the attendance in 1966 in spite of one meeting fewer.

Since 1960 Mrs. B. P. Hall has very kindly undertaken compilation of the annual indices with notable willingness and proficiency and she now retires from this task, but not before finding a successor in the person of Mr. Philip Burton whom we welcome at the same time as expressing our gratitude to Mrs. Hall.

To all who have contributed to the meetings and to the *Bulletin* our thanks are due and not least to Mr. K. E. Wiltsher, Manager of the Caxton and Holmesdale Press, for his ready co-operation.

J. J. YEALLAND.

COMMITTEE 1967

Dr. J. F. Monk, *Chairman* (elected 1965)
R. S. R. Fitter, *Vice-Chairman* (elected 1965)
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P. L. Sclater	1892–1913
Lord Rothschild	1913–1918
W. L. Sclater	1918–1924
H. F. Witherby	1924–1927
Dr. P. R. Lowe	1927–1930
Major S. S. Flower	1930–1932
D. A. Bannerman	1932–1935
G. M. Mathews	1935–1938
Dr. A. Landsborough Thomson	1938–1943
D. Seth-Smith	1943–1946
Dr. J. M. Harrison	1946–1949
Sir Philip Manson-Bahr	1949–1953
Colonel R. Meinertzhagen	1953–1956
C. W. Mackworth–Praed	1956–1959
Captain C. R. S. Pitman	1959–1962
Maj.-Gen. C. B. Wainwright	1962–1965
R. S. R. Fitter	1965–

Vice-Chairmen

Lord Rothschild	1930–1931
W. L. Sclater	1931–1932
H. F. Witherby	1932–1933
G. M. Mathews	1933–1934
N. B. Kinnear	1934–1935
H. Whistler	1935–1936

Vice-Chairmen—*cont.*

D. Seth-Smith	1936–1937
Colonel R. Sparrow	1937–1938
Dr. G. Carmichael Low	1938–1939
Hon. Guy Charteris	1938–1939
W. L. Sclater	1939–1940
Dr. D. A. Bannerman	1939–1940
Captain C. H. B. Grant	1940–1943
B. W. Tucker	1940–1943
F. J. F. Barrington	1943–1945
Dr. E. Hopkinson	1943–1945
C. W. Mackworth-Praed	1945–1946
Dr. J. M. Harrison	1945–1946
Sir Philip Manson-Bahr	1946–1947
B. G. Harrison	1946–1947
Lt.-Colonel W. P. C. Tenison	1947–1948
Miss E. M. Godman	1947–1948
Colonel R. Meinertzhagen	1948–1949
Major A. G. L. Sladen	1948–1949
Colonel R. Meinertzhagen	1949–1953
E. M. Nicholson	1953–1956
Captain C. R. S. Pitman	1956–1959
Mrs. B. P. Hall	1959–1962
R. S. R. Fitter	1962–1965
Dr. J. F. Monk	1965–

Editors

R. Bowdler Sharpe	1892–1904
W. R. Ogilvie-Grant	1904–1914
D. A. Bannerman	1914–1915
D. Seth-Smith	1915–1920
Dr. P. R. Lowe	1920–1925
N. B. Kinnear	1925–1930
Dr. G. Carmichael Low	1930–1935
Captain C. H. B. Grant	1935–1940
Dr. G. Carmichael Low	1940–1945
Lt.-Colonel W. P. C. Tenison	1945–1947
Captain C. H. B. Grant	1947–1952
Dr. J. G. Harrison	1952–1961
J. J. Yealland	1962–

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D. A. Bannerman	1918–1919
Dr. Philip Gosse	1919–1920
J. L. Bonhote	1920–1922
C. W. Mackworth-Praed	1922–1923
Dr. G. Carmichael Low	1923–1929
C. W. Mackworth-Praed	1929–1935

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Dr. G. Carmichael Low	1943–1945
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Miss E. Forster	1960–1962
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Major A. G. L. Sladen	1936–1942
Miss E. P. Leach	1942–1949
C. N. Walter	1950–1962
P. Tate	1962–

LIST OF MEMBERS AS AT 31st OCTOBER, 1967

Amended as follows:

New Members

Eddie, William M. H., 66 Viewmount Drive, Glasgow, N.W.
Gardiner, Norman, Physics Dept., University College, P.O. Box 9184, Dar-es-Salaam, Tanzania.
Griffiths, Martin E., Kentok, North Orbital Road, St. Albans, Herts.
Gyle-Thompson, Miss Robina, Old Quarry House, North Park, Gerrards Cross, Bucks.
Lock, J. M., Nuffield Unit of Tropical Animal Ecology, P.O. Queen Elizabeth Park, Uganda.
Sales, Victor, A. D., 54/12 Street North, Ahmadi 1, Kuwait
Weir, The Hon. Vincent, Brock House, Gt. Chesterford, Saffron Walden, Essex.

Resigned

Cdr. T. M. B. Firth
Miss E. Forster
Mr. L. G. Grimes
Mr. E. Simms

Died

The Committee regret to record the death of the following members:
Mrs. H. W. Boyd-Watt,
The Hon. Guy Charteris, (Vice-Chairman 1938–1939)
Col. Richard Meinertzhagen, (Vice-Chairman 1948–1949; 1949–1953 and Chairman from 1953–1956)
Mr. M. E. W. North

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Corrigendum

p. 132, line 12. *Zoothera dauma eichorni* Hartert

should read *Zoothera dauma choiseuli* (Hartert)

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The six hundred and thirty-ninth meeting of the Club was held at the Rembrandt Hotel, London, on the 20th December, 1966.

Chairman: Dr. J. F. Monk

Members present: 19; Guests 9.

Mr. Philip Wayre showed his coloured film of the Norfolk brecklands entitled "A Wind on the Heath".

Breeding of the Black Heron in Ghana

by L. G. Grimes

Received 14th October, 1966

Although Bannerman (1930) records that eggs of the Black Heron *Melanophoyx ardesiaca* (Wagler) have been taken in the Gambia, he states later (Bannerman 1953) that " no one has described the nesting of this heron in West Africa." Elsewhere in Africa it is known to breed at Kisumu, Lake Victoria in May and June and also February and March (Mackworth—Praed and Grant, 1957) and in Natal it has been found breeding in mid-December (Clancey 1964).

During 1966 weekly visits have been made to an area of coastline some seven miles west of Accra. The river Densu flows through several small lagoons and much is mangrove swamp. Ground that is covered with water at high tide has the creeping weed *Sesuvium portulacastrum* growing on it and in the wetter parts the reeds *Cyperus articulatus* and *Paspalum vaginatum* grow extensively. Over the last six years more and more of the flooded areas which are clear of mangrove have been converted into salt pans.

M. ardesiaca in the study area has been recorded in each month of the year. It usually feeds in isolation from other birds and in small flocks of up to thirty or forty. Occasionally flocks up to a hundred or more have been recorded in April, May and June. They prefer the flooded areas which which are clear of the mangrove but occasionally feed with other herons *Casmerodius albus melanorhynchos*, *Egretta garzetta* and *Demigretta gularis* in the salt pans.

On 15th August, 1966 I saw an adult bird perched near its nest and the same bird incubating later the same day. The nest was a loose collection of sticks and contained three eggs on the 15th August: it was at a height of about 20 feet in a mangrove tree *Avicennia nitidia* some few yards from the edge of one of the lagoons. The eggs were pale blue in colour and unfortunately were not measured. Two other nests of *M. ardesiaca* were in separate trees some fifteen yards away and although the birds were incubating, the nests were not examined. The Reef Heron *D. gularis* is the common breeding heron and was also incubating in a tree nearby. All these nests suffered from predators which were probably the Pied Crow *Corvus albus*.

I am indebted to Mr. A. E. Enti of the herbarium of the University of Ghana for identifying the plants mentioned in the note.

In the June 1966 issue of the *Bulletin of the Nigerian Ornithologists' Society* Vol. 3, No. 10, Hopson describes the breeding of *M. ardesiaca* in a mixed colony of herons near Lake Chad. Breeding took place in February, March and April and all nests examined contained four eggs and were from two to four feet above the water. Breeding records are described for the winter 1964–65. In 1965–66 the area was much drier and no breeding took place.

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On the moults and breeding season of the Long-tailed Starling *Lamprotornis mevesii* (Wahlberg)

by R. K. Brooke

Received 15th October, 1966

Traylor (1965) following Benson (1959) pointed out that *Lamprotornis mevesii* might undergo its complete moult before rather than after breeding. He collected freshly moulted birds in January. He believed that they had laid in August and September when most starlings in Ngamiland lay, but noted that Benson (*op. cit.*) believed that *L. mevesii* bred during the rains. Brooke (1965) showed that this species lays during the rains from December to March. Since then I have examined seven fledglings in the National Museum, Bulawayo, and of these one is calculated to have come from an egg laid in December and six from March-laid eggs. In addition, Dowsett (in press) records observations on a nest started at the beginning of March. These further records making twenty-eight in all, confirm that the species is a rains breeder. Nonetheless K. E. Cackett (*in litt.*) has seen copulation in mid-September at Chiredzi, Rhodesia.

When visiting the National Museum, Bulawayo, recently through the courtesy of the Curator and the Ornithologist, Mr. M. P. Stuart Irwin, I was able to examine a series of more than 140 specimens from Zambia, Botswana (formerly Bechuanaland Protectorate), Rhodesia and the Tete Province of Mozambique with a view to elucidating their moults and amplifying Traylor's (1965) comments. The results are set out in Table I but certain points must be made in the text. In the first place the duration shown for each moult covers a series of specimens. I think each individual may take half the period shown since early moult may occur well after the start of a period shown in the table and late moult well before the end of a period.

The pre-juvenal moult is described by Dowsett (in press). The post-juvenal moult effects only the abdomen whereby the black feathers with slight purple tips on the flank feathers only are replaced by iridescent purple feathers with virtually no copper shade apparent at any angle. The feathers of the juvenal plumage are more fragile than those arising from a complete moult and abrade more rapidly.

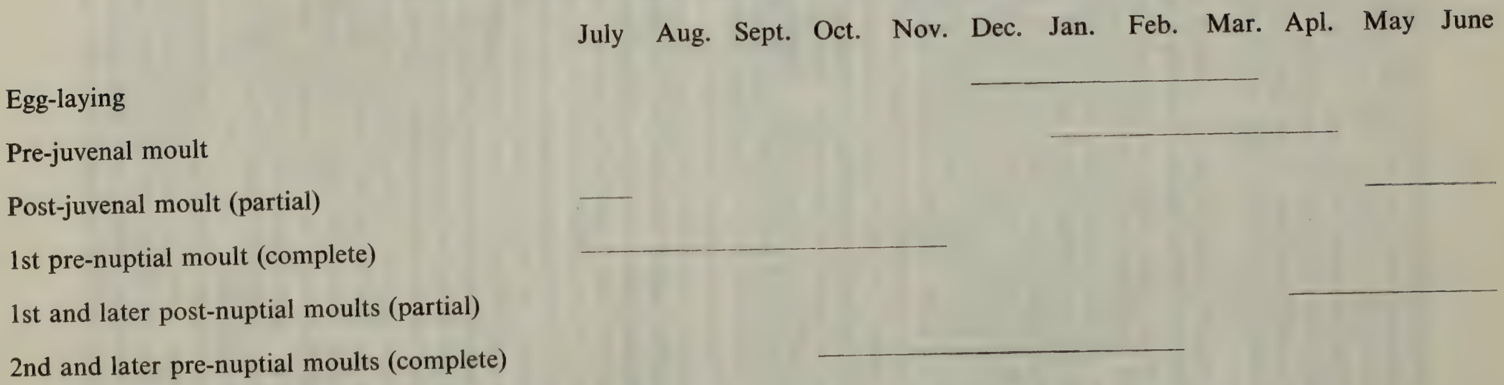
The first pre-nuptial moult begins with the mantle, nape and secondaries and only after this is well underway do the breast, tail and primaries start moulting. Most skins are prepared by cutting the abdominal skin and extracting the torso. This damages and disarrays the abdominal feathers and so I find it difficult to be sure when the abdominal moult occurs. The moult of the primaries is a descending one and that of the secondaries is in general ascending, though the individual secondaries, of which there are eight, may not moult either in sequence or even at all. I am unable to determine the order of moult in the twelve rectrices partly because few specimens show it and partly because it is jumbled and certainly not consecutive. It may even be that not every tail feather is dropped in the pre-nuptial moult. In addition one of the central pair is always carried on top of the other and thus wears much more quickly.

The first adult plumage is identical with later plumages and presumably the birds breed when just under a year old. The first post-nuptial moult affects the mantle and nape and in a few examples some (or all) of the tail feathers. The second (and later) pre-nuptial moults are similar to the first pre-nuptial but moult in the different tracts starts more nearly contemporaneously and that of the outer primaries is protracted, no doubt because it is superimposed on the breeding season. In distinguishing the first and second pre-nuptial moults I have been guided by the presence or absence of copper iridescence, its absence indicating the first pre-nuptial and its presence the second (or a later) pre-nuptial moult. Its presence is the only obvious character for distinguishing adult from immature birds.

It appears that this species' long legs keep their bodies from much contact with the ground and vegetable substrate and so their underparts are not much abraded. Thus the copper iridescence on the abdomen remains largely intact from one moult to another. The corollary of their high stance is that they push against things above them and thus abrade nape, mantle and the uppermost central rectrix and so require a post-nuptial moult of these feathers.

Virtually nothing is known in detail of its diet (fruit, berries and insects according to McLachlan and Liversidge, 1957; since then Benson, 1959, has recorded breeding birds eating termites, beetles, small black ants and mole crickets) and of seasonal shortage and abundances. Since most other *Lamprotornis* starlings (*L. australis* (Smith) is a rains breeder, Benson and

TABLE I — Times of egg-laying and moult in *Lamprotornis mevesii*



Pitman 1966) breed in September, October and November in the areas occupied by the Long-tailed Starling they must also find feeding easy at this time and hence the occurrence of the complete moult of *L. mevesii* at that time. The difference in breeding season may be due to different food preferences or to some avoidance of competition either for food or nest sites.

During the winter there is a decline in the number of insects in the areas where it lives (K. E. Cackett *in litt.*) so it may well be that there would not be sufficient food to support fledglings and complete moults simultaneously. Whistler (1940) describes a very similar breeding and moult regime in *Carduelis spinoides* Vigors the Black-headed or Himalayan Greenfinch whose general ecology as a submontane seed eater (Whistler 1928) appears to have nothing in common with a fruit and insect eating starling of the arid lowlands.

I am obliged to Messrs. C. W. Benson, M. P. Stuart Irwin and M. A. Traylor for criticising the draft of this paper.

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Postscript: Since drafting the above text an interesting breeding record has come to hand. Mrs. H. R. Gillett of Chipinda Pools, Lundi R., Rhodesia, had a pair of Long-tailed Starlings visit her garden between 23rd April and 2nd May with the juvenile *Clamator* cuckoo they were looking after. She thought the species was *C. jacobinus* (Boddaert) but it is *C. glandarius* (L.) which parasitizes starlings in southern Africa.

A new subspecies of the Ruby-cheek *(Anthreptes singalensis)* (Gmelin) from Java

by A. Hoogerwerf

Received 25th April, 1966

A small series of this sunbird secured on Java's most western peninsula, Udjung Kulon, does not fit into *phoenicotis* known from the remaining part of Java nor in the populations known from the surrounding regions.

When comparing equal series of six males of *phoenicotis*, *sumatrana* and *borneana*, from Java, Sumatra and Borneo respectively, it seems quite impossible to separate Sumatran and Bornean specimens on account of any difference in tint or extent of the yellow and brown on the under surface. In *sumatrana* as well as in *borneana* the brown on chin, throat and foreneck extends to the lower chest where it blends with the yellow of the belly. In both latter subspecies, the yellow is brighter than in *phoenicotis* but only in two of the six skins the brown on throat and foreneck is darker in the latter race than in males of *sumatrana* and *borneana.* The remaining four specimens do not differ at all in this respect from representatives of both last mentioned subspecies. Though I fail to see any difference in the extent of the brownish area on the underparts between material of all these three races, there is one male from West Java in which the brown reaches as far as the abdominal region, which is not so in any other specimen before me.

On the upperparts most males are clear metallic green, but some are bluish or violet-bluish which may be individual variation without any subspecific value. There is also some individual colour difference on the sides of head and neck.

When comparing three females of *phoenicotis* with three of *sumatrana* it is evident that the differences are rather conspicuous even in this small series: the brown on throat and foreneck is rather sharply margined and that colour is darker than in *sumatrana* and—according to Boden Kloss[1] —in representatives of all other subspecies, making the separation of *phoenicotis* quite acceptable. Regarding the females there are no subspecific differences in the plumage of upper surface and on the sides of head and neck.

Two juvenile females of *sumatrana* and *phoenicotis* only slightly differ: the Javan skin is a trifle darker above and yellower on the underparts.

These observations are based on material secured in 1940 or earlier. When comparing the six males obtained in Udjung Kulon with all males discussed above, we can separate them without difficulty because of the very clear greenish-yellow underparts and the large area which it covers. On account of these characters they seem closer to *koratensis* from Thailand regarding the diagnosis as published for this race. But in *koratensis* the brown and yellow on the underparts should be very sharply demarcated as in females of *phoenicotis.* This is only so in two Udjung Kulon birds, for in the remaining four the brown blends with the yellow; therefore *koratensis* and Udjung Kulon birds cannot be identical. From the fact that Boden Kloss remarked that *borneana* agrees with *interposita*, a second form known from Thailand, only differing in the brown on chin and throat, it also seems evident that our Udjung Kulon material cannot be identical with *interposita*, not even if there should be no geographical objections as is the case in *koratensis* and *internota*, still another subspecies from Thailand. Moreover in *borneana*—thus also in *interposita*—the brown reaches much further downward than in Udjung Kulon birds: the brown covers a smaller, the clear greenish-yellow a much larger area than in *sumatrana*, *borneana*, *phoenicotis* and *interposita.* Because birds of the nominate race are said to be greener on the underparts than *interposita*, and also *borneana*, it is evident that this form too cannot be identical with Udjung Kulon's population. The same holds good for *pallida*, known from the Natuna Islands which is said to differ from *singalensis* only in the brown on chin, throat and foreneck, which is less intense and less sharply defined.

The differences between *sumatrana*, *borneana* and *phoenicotis*, and Udjung Kulon birds are so conspicuous and so uniform that almost all skins from the latter locality can be separated at once from the remaining males examined by me. This is not only so when looking upon six fresh birds, but also when comparing a male collected in 1932 in the neighbourhood of this area, which fits well in our fresh series. Even if considerable *post mortem* changes in the tone of the underparts should occur—which is very improbable—the differences in extent of both these colours must remain as a substantially different character. Four males from this territory have the brown on chin, throat and foreneck rather dark but none is so dark as in the two males of *phoenicotis* indicated above.

Three males borrowed from the Leiden Museum belonging to *phoenicotis* confirm the conclusion expressed above, though all these have brighter yellow underparts than the old material from the Bogor collection. Also three males of *borneana* sent on loan from Singapore confirm my conclusion. The three males of *koratensis* also borrowed from the National Museum at Singapore, differ much individually; one of them cannot be separated from *phoenicotis* or *borneana* but in both others the yellow on the underparts covers the same area as in birds from Udjung Kulon, though more sharply separated from the brown on the foreneck than they. Moreover these *koratensis* males have distinctly smaller wings than have the Udjung Kulon males.

The two juveniles (♂♀) from this area have more yellow below than a young male and female of *sumatrana* and another juvenile female of *phoenicotis;* the two recently collected immature birds, however, do not differ much from a young female collected in 1932 close to Udjung Kulon, which makes it reasonable to suppose that in this respect too there are subspecific differences as seems to be so in the upperparts which average greener in females from Udjung Kulon.

There is not much difference in size between all known subspecies of this sunbird, but our measurements point to a shorter tail in Udjung Kulon males when compared with *phoenicotis*, whereas *koratensis* has smaller wings.

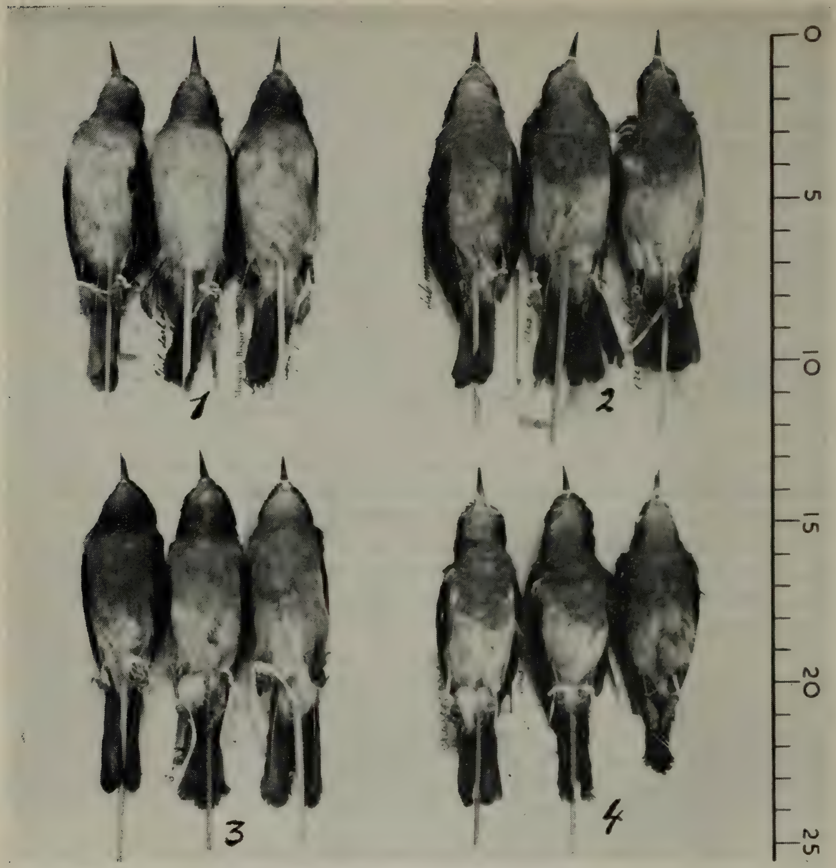
In view of the above and after the material has been seen by Dr. Amadon, I propose to separate the population of *Anthreptes singalensis* living in Java's most western part under the name

Anthreptes singalensis bantenensis subsp. nov.

Type: ♂ No. 23. 859, Udjung Kulon (West Java), Tjibunar, July 27th 1955; leg. A. Hoogerwerf.

Description: In size similar to the subspecies *sumatrana*, *borneana* and *phoenicotis* but the tail may average distinctly shorter than in *phoenicotis* wings larger than in *koratensis*.

On account of the small area of brown on chin, throat and foreneck and the very clear greenish-yellow of the lower underparts, which moreover covers a much larger area than in any of these three subspecies, representatives of the new race are strikingly different from *sumatrana*, *borneana* and *phoenicotis*.



Males of *Anthreptes singalensis*
1. *bantenensis* subsp. nov.; Udjung Kulon.
2. subsp. *sumatrana* Sumatra.
3. subsp. *phoenicotis* Java, not including the most western part.
4. subsp. *borneana* Borneo.

Though *bantenensis* seems closer to *sumatrana* and *borneana* than to *phoenicotis* regarding the yellow of the underparts, there is a considerable difference in the extent of this colour.

From *koratensis* described from Thailand, *bantenensis* differs in having more brown on throat and foreneck which colour, moreover, is separated in the subspecies *koratensis* very sharply from the yellow of the remaining underparts which is only the case in two out of the six *bantenensis* examined by me. Maybe there is also some difference in the tint of the brown and the yellow between both these races: the yellow underparts should be greener in *koratensis* but that is not so in the three skins examined by me.

In *interposita*, also known from Thailand, the brown extends further downward and birds belonging to the nominate race should be still greener below than *interposita* and are said to have much brown on chin, throat, foreneck and chest. The subspecies *pallida*, known from the Natuna Islands, should be less yellow below and *panopsia* can only be separated from *singalensis* because of differences in the female plumage and therefore cannot be identical with the new race.

A male of the new subspecies, collected in 1932 in an area not far from Udjung Kulon, almost exactly resembles the freshly collected material and therefore I think it justified to exclude important *post-mortem* changes.

There are no certain adult females at hand but two freshly collected juveniles (♂♀) and a young female obtained in 1932, differ from immature *sumatrana* and *phoenticotis* in having more yellow below and being brighter olive-green above. On account of the absence of any brown I suppose the freshly collected female to be a juvenile; if this bird is an adult female there is another very striking difference between Udjung Kulon birds and those from more eastern areas, *viz.*, the lack of any brown on the under surface. But the juvenile of 1932 shows a trifle of brown on one side of the throat which points to similarity with the females of *phoenicotis*, unless it was wrongly sexed. The Udjung Kulon female differs from adults of *borneana* or *sumatrana* on account of the yellower underparts and the purer olive-green on the upper surface.

Distribution: The range of *bantenensis* may extend further to the east than the narrow isthmus of Udjung Kulon, because the area whence the 1932 material was obtained, is situated about 15 miles from Udjung Kulon, which may be considered the *terra typica* of the new subspecies. The name of this region is Banten which finds expression in the name of this new race.

Measurements (in mm.):

♂♂ Wing; *phoenicotis* (Java): 54, 54, 56, 56, 56, 56, 57; *phoenicotis* (Java; borrowed from Leiden): 55, 56, 57; *phoenicotis* (Java; measured by Junge, Leiden): 54, 55, 56, 56, 57, 57, 58; *bantenensis* (Udjung Kulon): 54, 55, 56, 56, 56, 57; *sumatrana* (Sumatra): 53, 54, 54, 56, 56; *borneana* (Borneo): 53, 53, 54; *borneana* (Borneo; borrowed from Singapore): 55, 55, 56; *koratensis* (Thailand; borrowed from Singapore): 52, 54, 54.

Tail; *phoenicotis* (Java): 43, 43, 44, 45, 47, 47, 48; *phoenicotis* (Java; borrowed from Leiden): 44, 44, 45; *bantenensis* (Udjung Kulon): 41, 41, 42, 42, 42, 43; *sumatrana* (Sumatra): 39, 41, 42, 44, 45; *borneana* (Borneo): 38, 39, 40; *borneana* (Borneo; borrowed from Singapore): 42, 43, 43; *koratensis* (Thailand; borrowed from Singapore): 40, 43, 44.

Culmen; *phoenicotis* (Java): 12.2, 12.2, 12.5, 12.9, 13, 13.2; *phoenicotis* (Java; borrowed from Leiden): 12, 12.5, 12.9; *bantenensis* (Udjung Kulon): 12, 12.1, 13, 13.2; *sumatrana* (Sumatra): 11.9, 12.1, 12.9, 13.1; *borneana* (Borneo): 11.1, 11.8; *borneana* (Borneo; borrowed from Singapore): 12, 13, 13.8; *koratensis* (Thailand; borrowed from Singapore): 12, 12.8, 12.9.

Max., min. and average measurements:

	phoenicotis Java	*phoenicotis* Java (ex Leiden)	*phoenicotis* Java (measured by Junge)	*bantenensis* Udjung Kulon
Wing:	54–57	55–57	54–58	54–57
	55.57	56	56.14	55.67
Tail:	43–48	44–45		41–43
	45.29	44.33		41.83
Culmen:	12.2–13.2	12–12.9		12–13.2
	12.67	12.47		12.58

	sumatrana Sumatra	*borneana* Borneo	*borneana* Borneo (ex Singapore	*koratensis* Thailand (ex Singapore)
Wing:	53–56	53–54	55–56	52–54
	54.60	53.33	55.33	53.33
Tail:	39–45	38–40	42–43	40–44
	42.20	39	42.67	42.33
Culmen:	11.9–13.1	11.1–11.8	12–13.8	12–12.9
	12.50	11.45	12.93	12.57

♀♀ Wing: *phoenicotis* (Java): 52, 53, 54; *bantenensis*, juv. (Udjung Kulon): 54; *sumatrana* (Sumatra): 52, 53, 53;

Tail; *phoenicotis* (Java): 38, 40, 41; *bantenensis*, juv. (Udjung Kulon); 45; *sumatrana* (Sumatra): 36, 39, 42;

Culmen; *phoenicotis* (Java): 11.9, 12.1, 13.2; *bantenensis*, juv. (Udjung Kulon): 11.5; *sumatrana* (Sumatra): 12, 12.3, 13.2.

Max., min. and average measurements:

	phoenicotis Java	*bantenensis* Udjung Kulon	*sumatrana* Sumatra
Wing:	52–54	54	52–53
	53		52.67
Tail:	38–41	45	36–42
	39.67		39
Culmen:	11.9–13.2	11.50	12–13.20
	12.40		12.50

Reference:

[1] Boden Kloss, C. On the Ruby-Cheek with descriptions of three new subspecies; *Journal Federated Malay States Museums*, 10, 1921, p. 208-10.

Subspecific variation in *Macronyx ameliae* de Tarragon

by P. A. Clancey

Received 11th October, 1966

The decorative Pink-throated Longclaw *Macronyx ameliae* de Tarragon has an extended and rather disrupted distribution in eastern, central and south-eastern Africa, from the highlands of Kenya south-east to the Natal coast. Variation in this terrestrial species is generally conceded as being slight, and opinion among systematists is about equally divided as to the desirability or otherwise of recognising races. Those workers who do admit geographical races recognise two subspecies, namely, *M.a.ameliae* de Tarragon, 1845: Durban, Natal, and *M.a.wintoni* Sharpe, 1891: Kitoto Plain, Kavirondo, Kenya.

As is often the case in grass-haunting pipits, study of variation in *M.ameliae* is made difficult by the abrasive action coarse grass has on the plumage, and the colour leaching effected by the intense African sun. In this longclaw the issue is further complicated by the presence of a protracted nuptial moult in the male, in which the dorsal plumage is apparently not completely moulted at one time, but progressively throughout the whole period of nidification. This results in the mantle and scapulars of breeding males actually being a patchwork of sun-faded and worn and freshly moulted feathers. Meaningful study of variation must, therefore, be restricted to material consisting of freshly moulted birds. Study of such from many parts of the species' range (collected mainly between April and July) reveals that *M.ameliae* varies significantly in general size as revealed in standard wing- and tail-length measurements, the length of the bill, the degree to which the upperparts are streaked with black, the colour of the pale fringes to the back (mantle and scapular) feathers, and the extent to which the inner vane of the outermost rectrix is invaded with dusky. I can see no constant variation between population groups as regards the degree to which the ventral surface of the male is coloured with deep rose, which varies extensively individually, not only in the depth or nuance of the pigment but also in the extent of its distribution.

Most workers who have recognised races in *M.ameliae* have been content to rely on differences in bill-length measurements alone [see mainly Benson (1955)], but Chapin (1953) has drawn attention to rather darker dorsal coloration in the Katangese and Zambian populations. Even more recently, Ripley and Heinrich (1966) have further demonstrated the existence of significant variation in the degree of greyish or dusky wedging to the inner vane of the outermost rectrix.

A recent study of *M.ameliae* and its variation carried out in the Durban Museum shows that three races require to be admitted in this species, these being as follows:

(a) **Macronyx ameliae ameliae** de Tarragon

Macronyx ameliae de Tarragon, *Rev. Zool.*, 1845, p. 452: Port Natal, *i.e.*, Durban, Natal.

Margining to feathers of upperparts in freshly moulted dress about Sudan Brown [Ridgway (1912), pl. iii], the broad centres black. In tail, the outermost rectrices largely plain white, the dusky wash to the inner vane restricted to the basal third.

Wings of 10 ♂♂ 96–98 (96.5), culmens from base 20–22 (20.7) tails 75–81.5 (78.2), 3 ♀♀ wings 90, 91.5, 92.5, culmens 20 (2), 21, tails 70, 74 (2) mm.

Specimens examined: 23. (Natal, 3; Zululand, 5; southern Moçambique (north to Inhambane), 15).

Range: Coastal Natal (where now rare), eastern Zululand along the coast, and the Moçambique littoral north to about the Save R., but limits not determined.

(b) **Macronyx ameliae altanus** Clancey

Macronyx ameliae altanus Clancey, *Durban Mus. Novit.*, vol. vii, 12, 1966, p. 528: Mayau, northern Kabompo district, Zambia.

Similar in coloration to the last taxon, but smaller in size, shorter billed, and with the inner vane of the outermost rectrix marked with a dusky wedge-shaped area which is extended over the basal two-thirds.

Wings of 10 ♂♂ 90–94.5 (92.2), culmens from base 18–19.5 (18.6), tails 70–78 (73.0), wings of 10 ♀♀ 85–90 (87.4), culmens 17–19 (18.2), tails 65–72.5 (69.6) mm.

Specimens examined: 78. [Rhodesia, 20; Botswana, 1; Caprivi Strip, 4; Zambia, 50; Malawi, 2; northern Moçambique (Quelimane), 1].

Range: The plateau of Rhodesia, northern Botswana (Bechuanaland), including Ngamiland, the Caprivi and perhaps north-eastern South-West Africa along the Okavango R., to Angola, Zambia, the Katanga, Congo, Malawi, northern Moçambique, and south-western Tanzania.

(c) **Macronyx ameliae wintoni** Sharpe

Macronyx wintoni Sharpe, *Ibis*, 1891, p. 444 and p. 589: Kitoto Plain, Kavirondo, Kenya.

Similar in size, bill-length and the extent to which the inner vane of the outermost rectrix is wedged with dusky to *M.a.altanus*, but differs in freshly moulted plumage in both sexes, as well as in males in newly assumed nuptial dress, by being less heavily streaked with black on the upperparts. The streaks on the forehead and crown are narrower and not confluent, and those on the hind neck finer, while the rump and upper tail-coverts are less strongly spotted with black. Edging to feathers of the whole of the dorsal surface paler, and less saturated reddish, being about Buckthorn Brown (pl. xv), as against Sudan Brown. Usually less heavily striated over the sides of the breast and flanks, and ♀♀ less intensely streaked over upper breast.

Wings of 8 ♂♂ 89–94 (91.5), culmens from base 17–18.5 (17.8), tails 68.5–74 (71.0), wings of 4 ♀♀ 86–91 (88.1), culmen of one 17.5, tail 75 mm.

Specimens examined: 12. (Tanzania, 1; Kenya, 11).

Range: Central and northern Tanzania north from about Tabora, the highlands of Kenya, and perhaps extreme eastern Uganda.

Ripley and Heinrich, writing on Tanzanian *M.a.wintoni*, note that their males have narrowly streaked rather than a mainly black band across the upper breast, in contrast to the published description of the male by Mackworth-Praed and Grant (1955). The difference between the two findings results from the changes wrought by the restricted but protracted nuptial moult of the male, during which the brownish-buff, sepia streaked upper breast feathers of the non-breeding dress are replaced by others with the apical half black and the basal portion white. In well-coloured adults, the rose of the throat and medio-ventral plane may bleed to the white portions of these breast feathers. Breeding males of *M.ameliae* are almost invariably in a condition of contour plumage moult. The wing and tail feathers are, however, not changed during nidification, and become excessively eroded as the season advances, the wing-tip losing as much as *c.* 10–12 mm. as a result of abrasion and feather desiccation.

For the loan of material to augment that in the Durban Museum I am grateful to the Directors of the South African Museum (through Prof. J. M Winterbottom), the Transvaal Museum (through Mr. O. P. M. Prozesky), the National Museum of Rhodesia (through Mr. M. P. S. Irwin), and the Museu Dr. Alvaro de Castro, in Lourenço Marques. Mr. A. Forbes-Watson, Ornithologist of the National Museum of Kenya,

Nairobi, kindly assisted with data on specimens, and Mr. J. G. Williams generously made recently collected Kenyan material available.

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Comments on *Ammomanes burra* Bangs

by P. A. Clancey

Received 18th October, 1966

The status of the uncommon and localised Red Lark of southern Africa named *Ammomanes burra* by Bangs (1930) has given rise to much diversity of opinion over the years, but Lawson (1961) has shown more or less convincingly that it is no more than a well-marked race of the wide-ranging and highly plastic *Certhilauda albescens* (Lafresnaye). Despite recent objections to this finding, I find no cogent reasons for not admitting the validity of Lawson's conclusions in this regard, and the form is so treated in Clancey (1966). Alleged differences in the song and general biology do not detract materially from the case for considering *A.burra* a race of *C.albescens*, a conclusion based on the following: (a) the marked similarity in the general coloration and the degree and distribution of the ventral spotting between *A.burra* and *C.a.cavei* Macdonald (the two taxa are only consistently separable on the basis of bill shape and size and differences in dimensions). Furthermore, (b) *A.burra* and the forms of *C.albescens* of most authors are allopatric, while (c) the fact that *A.burra* interbreeds, albeit narrowly, with *C.a.karruensis* (Roberts) to the south of its range is indisputable proof of its true status. Incidentally, the intergrades between *A.burra* and *C.a.karruensis*, all mainly from the district of Brandvlei, were described as a distinct species (*Pseudammomanes harei*) by Roberts, in 1937. The fact that *A.burra* shares with a contiguous race of *C.albescens* a like reddish sandy dorsal facies, distinctive facial pattern, clear white underparts with the large black spots massed on the chest (*C.a.cavei*), and is known to interbreed with another (*C.a. karruensis*), leaves little room for the critics of the conspecificity of these lark forms in which to manoeuvre.

Bang's *A.burra* was proposed as a *nom. nov.* for *Alauda ferruginea* Lafresnaye, 1839, pre-occupied by *Alauda ferruginea* A. S. Voigt, 1831. Lafresnaye's *Type*, which is also the *Type* of *A.burra* is of unknown provenience apart from " South Africa". At the same time as Lafresnaye described the Red Lark, Dr. Andrew Smith again named the species on examples collected by himself on the Bushman Flats, in the north-western Cape Province, and using, by co-incidence also in 1839, the same name as employed by Lafresnaye. Most authors overlook this double naming of the Red Lark in the year 1839 by attributing the type-locality Bushman Flats to *C.a.burra*, which is, of course, only attributable to the *A.ferruginea* of Smith and not that of Lafresnaye, and Bang's renaming of the form applies strictly to the latter.

There is now no means of ascertaining the provenience of the *Type* of *A.ferruginea* Lafresnaye, even though it is still in existence in the Museum of Comparative Zoology, Harvard University, Cambridge, Mass. Dr. Raymond A. Paynter, Jnr., Curator of Birds at the museum, kindly informs me *in litt*. that the specimen in No. 76,171 in their collection, and that the flattened wing measures 108, the culmen from skull 18, and the bill height at nostrils 7 mm. These measurements confirm the correctness of the application of *burra* by Lawson (1961), and show that it is not an earlier name for *C.a.cavei*, to the possibility of which Clancey (1966) has recently drawn attention. Meinertzhagen (1951) claims to have examined the *Type* of *C.a.burra* at Harvard, and states that it differs in no way from examples collected for him by the present author in 1949 at Van Wyks Vlei, in the north-western Cape, which confirms this conclusion. In so far as the type-locality of *C.a.burra* is concerned, this cannot continue to stand simply as " South Africa," as given by Bangs, and it is here formally restricted to

Great Bushmanland, north-western Cape Province,

which is the centre of the taxon's circumscribed range.

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The eggs of Woodford's Rail, Rouget's Rail, and the Malayan Banded Crake

by C. J. O. HARRISON AND S. A. PARKER

Received 14th October, 1966

The following notes describe the eggs of three species of Rallidae, the first being previously undescribed and the published descriptions of the other two being based on wrongly identified specimens. The eggs described here are all in the collection of the British Museum (Natural History).

Woodford's Rail, *Nesoclopeus woodfordi* (Ogilvie-Grant). Two eggs were collected at Buin, at the south-east end of Bougainville, Solomon Islands by the Rev. Poncelet on 12th August 1926, and presented to the Museum by C. M. N. White (B. M. reg. no. 1937.5.5.1–2). They measure 46.5 x 33.3 and 47.2 x 33.9 mm. They are creamy-buff with a faint pink tint, and have large red-brown blotches, mostly towards the larger end, together with similarly distributed blotches in the thickness of the shell which appear faint purple and lilac. Eggs of *N. poecilopterus* from Fiji are, by comparison, larger and paler and have more profuse and much smaller red-brown spots.

Rouget's or Red-breasted Rail, *Rougetius rougeti* (Guérin-Méneville). Two clutches were taken at Dangila, Abyssinia, by R. E. Cheeseman. The first (B. M. reg. no. 1927. 11. 1. 63) was collected on 30th August 1926. Accompanying notes state—" Bird shot on nest of five eggs—(eggs) set; nest in rushes over water, incubation patches (on bird) marked—three eggs broken." The two unbroken eggs measure 43.9 × 31.5, and 44.2 × 30.9 mm. The second clutch is dated 20th September 1926 (B. M. reg. no. 1927. 11. 1. 68-72). The notes state "—set slightly, parent not shot as she deserted. Nest found with two eggs—one laid daily for two days after. Nest—pad of dead rushes on ground in high rushes in stagnant water." Although the account suggests four eggs the clutch is of five, measuring 46.8 × 30.6, 44.2 × 30.8, 43.9 × 31.6, 43.2 × 31, 42.4 × 31 mm. The eggs are of a creamy or ivory colour, very faintly tinted with buff, and with fine specks and irregular spots of red-brown, lilac, and grey, mostly concentrated at the larger end. One egg has the markings more evenly distributed over the shell, and another has a white ground colour. Although the description of the eggs has been available before, the measurements appear never to have been published, and the sizes quoted by Mackworth-Praed and Grant (1952) and Schönwetter (1962) refer to a much smaller egg, suggesting a confusion with some other species of rail, probably *Crecopsis egregia*.

Malayan Banded Crake, *Rallina fasciata*, (Raffles). Two clutches were taken by H. H. Harington in Burma and presented to the Museum in the H. N. Coltart collection. A clutch of three (B. M. reg. no. 1961. 1. 105) taken at Tankchan, near Rangoon, on 1st August 1907, measure 39.9 × 24.3, 31.1 × 25, 31 × 25.1 mm. A clutch of four (B. M. reg. no. 1961. 1. 104) also taken near Rangoon on 31st August 1907 measure 32.5 × 23.5, 32.6 × 24.3, 32.7 × 23.4, 32.5 × 24.6 mm. Sir W. Williamson collected an unidentified clutch of six eggs at Pak Jong, Kohat Railway, East Thailand on 3rd August 1919 (B. M. reg. no. 1949. 8. 100). Three feathers were found in the nest and these have now been identified as two inner secondaries and a secondary covert of *R. fasciata*. The eggs measure 32.6 × 25.2, 33.9 × 24.9, 33.2 × 25.4, 33.1 × 24.7, 34.1 × 24.7, 34.1 × 25.1 mm. The fairly large holes in this clutch suggest that they were not fresh when blown. All the eggs are ovate and of a rather chalky white colour, with a definite gloss.

E. C. S. Baker (1935) published data on the eggs of this species, apparently based on five clutches in his collection. These have been re-examined. A clutch of four was taken by J. C. Hopwood at Henzada, Lower Burma on 15th August 1917 (B. M. reg. no. 1952. 11. 72). Hopwood stated that the nest was of grass and leaves in dense undergrowth far from water, and he was unable to see the bird. When a net was cast over the nest a bird was taken and we are left to infer that this was an example of *Rallina fasciata*. The eggs are smaller than those described above, measuring 30.8 × 23.9, 29.3 × 24, 27.3 × 21.9, 28.5 × 23.6 mm. They have a more matt surface texture, and a blunter, more rounded, shape. They scratch easily revealing the presence of a thick " chalky " cuticle, differing in this respect from the typical eggs of *Rallina* and of any other rails. From a careful comparison of material it would appear that they are the eggs of the cuckoo, *Centropus bengalensis*. A clutch of two taken by W. A. T. Kellow at Simpang, Sumatra on 9th January 1913 (B. M. reg. no. 1952. 11. 76), were said to have been sent with the female, but they are not *Rallina* eggs. They are oblong-ovate with a matt surface which, under magnification, shows a scattering of fine crystals which reflect small points of light. When scraped the cuticular layer is chalky like that of the *Centropus* eggs. The eggs measure 34.4 × 25.6 and 32.4 × 25.1 mm. and by comparison appear to be the eggs of a Malkoha cuckoo, *Rhopodytes tristis*.

Finally there are the clutch of four and of two eggs also sent by W. A. T. Kellow from Simpang, (B. M. reg. no. 1952. 11. 73-75) and referred to by Baker (1935). These are in fact three clutches of two eggs, originally marked " T1, T2, T3," and presumably represent another example of the " making up " of clutches already observed elsewhere (Harrison 1966; Harrison and Parker 1966; in press). They show a slight tendency towards a biconical shape, have a very high gloss and a faint creamy-olive tint. They measure 33.9 × 24.9, 33.6 × 24.2, 31.9 × 24.5, 32.5 × 24.4, 31.3 × 24, and 30.5 × 24 mm. They appear to be the eggs of a pigeon, *Macropygia phasianella*. Baker uses the same nest description as that given for the *Rhopodytes* clutch.

It would appear that none of the eggs from Baker's collection are acceptable as *Rallina* eggs and on the basis of the clutches available the egg size data for *R. fasciata* should be—Average 32.7 × 24.6; maxima *34.1* × 25.1, 33.2 × *25.4*; minima *31* × 25.1, 32.7 × *23.4*.

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CONTRIBUTORS

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Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

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DINNERS AND MEETINGS FOR 1967

17th January, 21st February, 21st March, 18th April, 19th September, 17th October, 21st November, 19th December.

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The six hundred and fortieth meeting of the Club was held at the Rubens Hotel, London, on the 17th January, 1967.

Chairman: Mr. R. S. R. Fitter

Members present: 22; Guests 6.

Mr. Martin Woodcock spoke on birds seen by him in parts of Thailand and Malaya, illustrating his talk with coloured slides.

Secondary intergradation amongst bulbuls of the genus *Pycnonotus* in the Transvaal Province, South Africa

by Miles B. Markus

Received 28th February, 1966

Bulbuls of the genus *Pycnonotus* Boie are found throughout the Republic of South Africa where the vegetation is suited to their requirements. The various forms are currently treated by certain authors as races of a single species whilst other specialists recognise three distinct species. Purely for convenience in the discussion below the latter, perhaps more conventional, view is taken. The three closely related groups, *Pycnonotus capensis* (Linnaeus) 1766, *P. barbatus* (Desfontaines) 1787 and *P. nigricans* (Vieillot) 1818 occupy basically discrete geographical areas, overlaps of their respective ranges being comparatively limited in extent.

They are not restricted to such dense vegetation as the other South African Pycnonotidae, though on the whole *capensis* and *barbatus* occur in thicker bush than *nigricans* which, over most of its range, is an inhabitant of more open country. They all appear, as regards the drab nature of their plumage, to be adapted for life in reasonably open vegetation. Brooke (1965) attaches reversional significance to an abnormal yellowish wash on the throat of an albino *barbatus* in the National Museum, Bulawayo, suggesting that this may be an indication that the genus *Pycnonotus* as a whole represents a successful attempt by a group of forest birds to invade the savannas and that during the course of this expansion "yellow pigments have become scarcer in the plumage thus producing the dark brownish bulbuls out of green forest birds". In this regard it may be noted that in the Transvaal Museum at Pretoria there is a partially albinistic example (a flat skin) of *nigricans* from Keimoes in the northern Cape Province that is yellowish interramally. *Capensis*, *barbatus* and *nigricans* have, near the joint between the antebrachium and manus, yellow markings, clearly visible on white feathers which are situated mainly on the under surface of the wing. These might also be considered as possible evidence of a recent change of habitat. The colouring is, on the average, clearer in *capensis* and *barbatus* than in *nigricans* from more arid areas. Better known is the fact that all the South African *Pycnonotus* forms have yellow under the tail and that some of the races from less arid areas can have olive markings on the upper parts.

For the three major bulbul groups to have developed their present individuality, the gene flow in an ancestral pycnonotid population inhabiting South Africa must on at least one occasion in the geologic past have been disrupted. From a perusal of the literature it becomes increasingly obvious that our knowledge of what happens in the areas where one of the three resultant segregates gives way to another is insufficient for a proper evaluation and appreciation of the amount of evolutionary divergence that has taken place between them as a result of past differentiation in the geographic species fission process. If taxonomists are to reach greater agreement than at present in regard to their treatment of the nomenclatorial problem presented by these birds, it is imperative that the situation in such transition zones be investigated in considerably greater detail than has been done up to now.

A series of 10 adult specimens (see below for details) in worn plumage which bridge the morphological gaps between *barbatus* and *nigricans* has recently been collected (by A. N. Markus and the author) approximately 5 miles north of Fochville in the Transvaal. All were shot in the same mulberry tree, two on 2 October 1965 and eight on 21 October 1965. They are now housed in the South African Museum, Cape Town. Each bird is referred to below by its respective South African Museum (S.A.M.) registration number.

METHODS

Specimens were weighed in grammes immediately after collection. After weighing, a longitudinal incision was made in the centre of the abdomen and the proventriculus, gizzard, intestine and part of the liver dissected out together with associated tissues. Ovarian condition and testicular dimensions were recorded and the testes placed in Bouin's fixative for subsequent laboratory determination of the stages of spermatogenesis. The microtomized sections, cut at 5μ, were stained with iron haematoxylin to reveal nuclear details. Orange G was used as a counterstain.

It is not possible to determine accurately the original nature of the eyelid/ eye-wattle of a hybrid from a skin as desiccation soon causes a reduction in the size of these structures; this is accompanied by a *post mortem* colour change. The skin surrounding the eyes was therefore examined in the field and details noted. The partially eviscerated cadavers were refrigerated and skinned later.

Weights and measurements for the wing (flattened), tail, bill and tarsus are given in Tables I (♂♂) and II (♀♀). S.A.M. 55255 e was damaged by shot and could not be sexed. The "bill" was measured from the anterior margin of the nostril to the tip of the upper mandible; and the "tarsus" at the back, from the point of the joint between the tibia and metatarsus to the basal joint of the hind toe (distally). The wing and tail measurements represent minimum lengths as the tips of the longest remiges and/or rectrices of many of the specimens were abraded. Measurements are in millimetres. In view of the heterogeneous nature of the sample, means have not been calculated as they would have no significance. Weights are not available for all the bulbuls. Qualitative and other information is given below for each individual separately. In every case the irides were red (the irides of *nigricans* are typically red; those of *barbatus* are usually brown, though sometimes reddish).

NOTES ON INDIVIDUAL SPECIMENS

S.A.M. 55255 a

♀, 2 October. Not in breeding condition. More like *nigricans* on the throat than *barbatus*. Eye-wattle poorly developed and dark brownish-black externally though yellower on the bottom lid towards the temporal canthus. Inner surfaces of both lids bright orange near the outside instead of the normal yellow, this being less marked on the lower lid.

S.A.M. 55255 b

♀, 2 October. Ovary slightly granular, largest oocyte 1 mm. in diameter. On throat more like *barbatus* than *nigricans*. Eye-wattle similar to that found in normal *nigricans*; colour orange.

S.A.M. 55255 c (mate of 55255 d)

♂, 21 October. Left testis 9.0 x 6.0, right 9.0 x 6.25; the height of spermatogenetic activity had been reached and bunched sperms are present in all the seminiferous tubules. Similar in plumage to *P. n. superior* Clancey, 1959. Eyelids larger than in typical *barbatus* but not as well developed as in typical *nigricans*. In colour a mixture of yellowish-khaki and dark greyish-black, less of the latter in the region of the temporal canthus. The inner lining was yellow (normal).

S.A.M. 55255 d (mate of 55255 c)

♀, 21 October. Not in breeding condition. Throat coloration intermediate between *barbatus* and *nigricans*. Wattle similar to that of *nigricans*; yellowish-orange, becoming yellow on the inside.

S.A.M. 55255 e

Collected on 21 October. The gonads of this specimen were shot away together with most of the back where the oviducts in the ♀ or vasa deferentia in the ♂ are normally situated, so the sex could not be determined. The throat is not like that of *nigricans* and approaches the condition in *barbatus*. Eyelid black externally, indistinguishable from that of *barbatus*. Colour of inner lining also normal. Bill 10 mm., wing 99 mm.

S.A.M. 55255 f (mate of 55255 g)

♂, 21 October. Left testis 10.75 x 6.5, right 10.0 x 7.0; full spermatogenesis has occurred and discharge of spermatozoa through the tubule lumina has begun. In plumage similar to *P. n. superior*. Eye-wattles well developed. On the upper lid mainly dark greyish-brown, the inner lining an unusually bright yellow; dark greyish-brown mixed with yellowish-khaki on the lower lid, the colour of the lining being yellowish-khaki.

TABLE I
MEASUREMENTS AND WEIGHTS (♂♂)*

No. of specimen	*Wing*	*Tail*	*Bill*	*Tarsus*	*Weight*
S.A.M. 55255 c	102·5	94·0	11·0	23·0	38·5
S.A.M. 55255 f	103·0	92·0	11·75	23·0	39·0
S.A.M. 55255 h	98·0	86·0	11·0	22·0	38·5
S.A.M. 55255 i	101·0	90·5	12·0	22·0	38·0
Range	98–103	86–94	11–12	22–23	38–39

*Lawson (1962) gives, *inter alia*, the following measurements for *Pycnonotus barbatus layardi* Gurney (14♂♂): wing 96·0–106·5 (av. 99·6), tail 85·0–99·0 (av. 88·8); and for *P. nigricans superior* Clancey (16♂♂): wing 97·0–108·0 (av. 99·8), tail 84·0–95·0 (av. 87·7).

TABLE II
MEASUREMENTS AND WEIGHTS (♀♀)*

No. of specimen	*Wing*	*Tail*	*Bill*	*Tarsus*	*Weight*
S.A.M. 55255 a	97·0	87·0	10·5	22·0	—
S.A.M. 55255 b	97·5	86·0	11·0	22·0	—
S.A.M. 55255 d	92·0	—	10·0	22·0	33·0
S.A.M. 55255 g	98·0	86·0	11·0	22·5	37·0
S.A.M. 55255 j	100·0	90·0	11·0	21·0	34·5
Range	92–100	86–90	10–11	21–22·5	33–37

*Lawson (1962) gives, *inter alia*, the following measurements for *Pycnonotus barbatus layardi* Gurney (15 ♀♀): wing 92·0–96·5 (av. 94·3), tail 80·0–97·5 (av. 84·5); and for *P. nigricans superior* Clancey (16 ♀♀): wing 92·5–101·5 (av. 96·3), tail 80·0–88·0 (av. 83·4).

S.A.M. 55255 g (mate of 55255 f)

♀, 21 October. Largest oocyte 1 mm. in diameter. Throat intermediate between *barbatus* and *nigricans*. Wattles well developed and mainly dark greenish-grey, becoming light orange towards the inside and towards the temporal canthus. Inner lining yellow (normal).

S.A.M. 55255 h

♂, 21 October. Left testis 5·25 x 3·5, right 3·5 x 2·5; tubules enlarging, containing secondary spermatocytes and spermatids. Some spermateleosis has taken place. Throat similar to *nigricans* but not as wholly black as in typical *nigricans*, in this respect tending towards *barbatus*. Wattle well developed, orange.

S.A.M. 55255 i

♂, 21 October. Both testes measure 9·75 x 6·5; bunched spermatozoa have been formed in the seminiferous tubules. Many sperms are free in the lumina. Plumage as in *P. n. superior*. Wattle well developed, orange.

S.A.M. 55255 j

♀, 21 October. Largest oocyte 1 mm. in diameter. Indistinguishable from *P. n. superior* as regards plumage. Wattle well developed, orange.

DISCUSSION

Because of the fact that the plumage characters of *nigricans* and of the austral races of *barbatus* are so very similar, it is not always easy to recognise an intermediate specimen and this may be one of the reasons why relatively few of these are known. *Barbatus*, however, does not have the full black chin which is characteristic of *nigricans* and this is the most constant and obvious distinction between the two; and whereas *nigricans* normally has a well developed orange to reddish-orange wattle surrounding the eye, the eyelid in typical *barbatus* is black externally. One of the Fochville birds when collected had a black eyelid, indistinguishable from that of *barbatus*, five had an orange wattle as in *nigricans* and four were variably intermediate, a phenomenon resulting from recombination of the parental genomes. Varying degrees of intermediacy as regards the throat colour are also evident. Similar variation about the throat has been noted amongst apparent hybrids from other localities *e.g.* by Winterbottom (1966) for birds from the Okavango. Random interbreeding at Fochville of hybrid progeny with individuals of the same and other filial generations and with the parental types probably occurs, this accompanied by Mendelian assortment and segregation. There are probably few direct F_4 hybrids in this variable intermediate subpopulation which is basically composed of bulbuls differing from each other and from the more homozygous parental norms, *barbatus* and *nigricans*, by a few of the many hereditary units by which these two populations differ. The expression of any genotypic heterozygosity in S.A.M. 55255 i and S.A.M. 55255 j, which are not visibly separable from typical *nigricans*, is likely to be obscured by one or more such possible complicating factors as gene interaction, some genes interfering with the action of others, dominant-recessive allelic control and the presence of fewer or more polygenes; the latter have a cumulative action and incomplete or no dominance. Evidence of hybridization can thus be masked.

That unlike phenotypes will mate is shown by the irregular sexual dimorphism of one of the two "identified" pairs of birds that were taken. On the basis of their behaviour these were assumed to be paired. The two pairs are S.A.M. 55255 c and 55255 d; and S.A.M. 55255 f and 55255 g. It will be noted that gametogenetic activity in the females has lagged behind that in the males but this is normal. Markus (1963 a) refers to a third pair from the South-western Transvaal. The eye-wattles were "rather a light brownish-khaki, becoming yellowish towards the inside, thus intermediate in coloration between *P. b. layardi* and *P. nigricans* . . ." Those of one bird were slightly darker than those of the other, the plumage of both resembling that of *P. b. layardi* Gurney, 1879.

Additional instances of the occurrence of unusual eyelids/ eye-wattles are provided by White (1956) (Angola) and Markus (1963 b) (Transvaal). Mr. O. P. M. Prozesky has drawn my attention to fresh specimens in the Transvaal Museum that are also intermediate in this regard (from Tuli Block on the eastern border of Bechuanaland). Irwin (1958) records a pair of birds with dissimilar but normal wattles (Bechuanaland).

It should be borne in mind that natural selection is probably not operating against bird hybrids if they are as numerous in the hybridization belt as are the parental types in their respective areas, if hybrid sterility and lack of viability are not apparent and if there is a minimum of evidence of preferential mating between like phenotypes. Where this is so, ''regardless of the morphological differences between the parental populations, they must be treated as conspecific for so they have proved themselves'' (Sibley, 1959).

In normal *P. b. layardi* the inner surfaces of the eyelids, notably the upper lids, are lined with yellow near the outside although the external surfaces themselves are black (Markus, 1965). Mr. Peter Woodall (pers. comm.) recently informed me that the yellow pigmentation was also present in a Salisbury bird that he checked. Bulbuls in the latter area have, quite correctly in my opinion, been separated from *P. b. layardi* by Lawson (1962) as *P. b. naumanni* Meise (*P. c. naumanni*) and it seems probable that the yellow lining to the eyelids will be found in the other forms of *barbatus* as well. It is interesting to note that certain of the Fochville birds, apart from the intermediate appearance of their eye-wattles externally, were also anomalous as regards the colour of the inner pigmentation and this fact would seem to lend support to an earlier suggestion (Markus, 1965) that the presence of the normal yellow lining in *P. b. layardi* is a heritable trait linking *barbatus* (eyelid black externally) with *nigricans* (eye-wattle orange externally).

The histological results (see above) demonstrate conclusively that the testes of males which are morphologically intermediate between *barbatus* and *nigricans* can produce gametes but prove nothing beyond this *e.g.* determination of gametic viability is not possible. Any genetic incompatibility between the two groups has not been of such a nature as seriously to affect the normal spermatogenetic process. It remains to be ascertained whether or not *barbatus* x *nigricans* heterozygotes are completely balanced physiologically, both somatically and with regard to the germinal tissues; also whether effectively interbreeding bulbul populations in such contact hybridization zones have reduced viability or whether they are heterotic in any way. It is not yet known if there is any sexual difference in the degree of hybrid fertility or if there is any perceptible chromosomal divergence between *barbatus* and *nigricans*, either structurally or numerically.

The replacement zone in the Transvaal in which hybrids are found is not extensive, for intermediates are not normally found at any great distance from it. Markus (1963 b), however, records the case of a bulbul indistinguishable from *P. b. layardi* as regards plumage but with the skin around the eye lemon-yellow instead of black. The locality in which it was trapped lies within and not on the periphery of the range of *P. b. layardi* and it was suggested that the bird might be a mutant or that the yellow eye-wattle represented an ancestral condition and was an atavism due to gene interaction. Dr. R. M. Harwin (pers. comm.) has remarked that this individual could be the offspring of a dry season *nigricans* wanderer which moved out if its normal range and then stayed behind and interbred with *P. b. layardi*. This is also a possibility. The two forms are certainly very similar with regard to voice and behaviour but to date no detailed analyses have been undertaken.

CONCLUSION

Barbatus and *nigricans* seem not to be mature species, evolutionarily speaking, even though they may appear to be fully distinct species phenotypically.

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Mr. O. P. M. Prozesky kindly allowed me to examine skins in the Transvaal Museum collection. I must also thank Mr. and Mrs. P. P. Oosthuizen for permission to collect on their farm. The fact that I was able to use (through Mr. G. J. Scheepers) chemicals and apparatus belonging to the Department of Zoology, University of Pretoria, made the preparation of the microscope slides possible and I am grateful to the Head of the Department, Prof. F. C. Eloff, for granting me these facilities.

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A new subspecies of the Wattled Bulbul *Pycnonotus urostictus*, of the Philippines

by KENNETH C. PARKES

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The endemic Philippine bulbul *Pycnonotus urostictus* is currently divided into three subspecies, characterized by Delacour and Mayr (*Birds of the Philippines*, 1946: 174) as "rather indistinct." Rand and Rabor (*Fieldiana: Zoology*, 35, 1960: 428), whose material was admittedly inadequate, provisionally accepted the three named races, stating that the differences observable in their series were "about at the level used to characterize lightly marked subspecies". On the basis of the characters presently used to define the three subspecies, namely the amount of white on the abdomen and the shade of colour of the brown upperparts, these authors are justified in considering the races recognizable but not strikingly distinct. An additional excellent taxonomic character has been overlooked, however, in the colour of the rectrices. Study of a good series shows that the populations currently united under the name *P. u. urostictus* (Salvadori) actually comprise two subspecies, one of which requires a name. It may be called:

Pycnonotus urostictus atricaudatus, subsp. nov.

Type: American Museum of Natural History no. 708417, adult ♂, collected at San Isidro, Samar Island, Philippines, 20th April, 1957, by D. S. Rabor (collector's no. 15046).

Characters: Differs from *P. u. urostictus* (type locality Luzon) in having rectrices much blacker, and white spots on tips of all rectrices decidedly larger; in *urostictus* there is little or no white at the tips of the central pair of rectrices, while in *atricaudatus* these feathers have a distinct white tip. Differs from *P. u. philippensis* (Hachisuka) (as exemplified by specimens from eastern Mindanao; topotypes from Dinagat were not available) in having somewhat blacker rectrices and a smaller area of white on the abdomen. Differs from *P. u. basilanicus* (Steere) of Basilan in the same way, also in having the back browner, less olivaceous.

Range: Islands of Samar, Leyte and Bohol, Philippines.

Remarks: Although the populations here described as *atricaudatus* were previously united with nominate *urostictus*, the new subspecies shares its broad white tail-tips with the two previously recognized southern races, *philippensis* and *basilanicus*. The blackness of the tail of *atricaudatus* is not a function of museum age; recently collected specimens were available from most islands, and a specimen collected on Samar in 1896 does not differ in tail colour from a series taken in 1957 (colour comparisons described here were made in 1962).

The Wattled Bulbuls of the island of Mindanao as a whole have generally been assigned to the subspecies *philippensis*. Examination of a good series from the Zamboanga Peninsula of westernmost Mindanao, however, shows clearly that the population of this area is closer to *basilanicus* than to *philippensis*. The amount of white on the underparts is about the same in these two subspecies, but in *philippensis* there is a clearly defined contrast between the breast and abdomen, while in *basilanicus* there is a blending at this border. In addition, *basilanicus* is greener (less brown) dorsally, and has distinctly yellowish axillars and under wing-coverts (these feathers being white in *philippensis*). The northern races *atricaudatus* and *urostictus* are also yellower in these under wing areas than is the geographically intermediate *philippensis*.

Among the populations here considered *urostictus*, that of Polillo may prove separable, as the few specimens available appear to be smaller than Luzon birds; possible colour differences cannot now be assessed, as the Polillo birds before me are in worn plumage. A single specimen from Catanduanes resembles Luzon birds but has even narrower white tail-tips.

Specimens examined: P. u. urostictus—Luzon, 18; Polillo, 4; Catanduanes, 1. *P. u. atricaudatus*—Samar, 8; Leyte, 6; Bohol, 4. *P. u. philippensis*—Eastern Mindanao, 6. *P. u. basilanicus*—Basilan, 7; Zamboanga Peninsula, western Mindanao, 19.

ACKNOWLEDGMENTS

To supplement the 13 specimens of *urostictus* and 2 of *basilanicus* at Carnegie Museum, material was examined from the collections of the American Museum of Natural History, Field Museum of Natural History, and Peabody Museum of Natural History at Yale University, through the courtesy of Drs. Dean Amadon, Austin L. Rand and S. Dillon Ripley respectively. Travel to other museums was partly supported by a grant from the Chapman Memorial Fund of the American Museum of Natural History.

Three Wigeon and Pintail hybrid siblings: a study in "intersexuality"

by JAMES M. HARRISON

Received 21st October, 1966

It is, of course, well known that the different species of the Anatinae, with some notable exceptions, hybridise readily and moreover that the offspring are often virile and fertile.

However, this is not invariably the case, and the three siblings which are the subject of this communication exemplify the fact that, at times, the effects of such interspecific hybridisation can produce profound and often harmful results with consequent sterility.

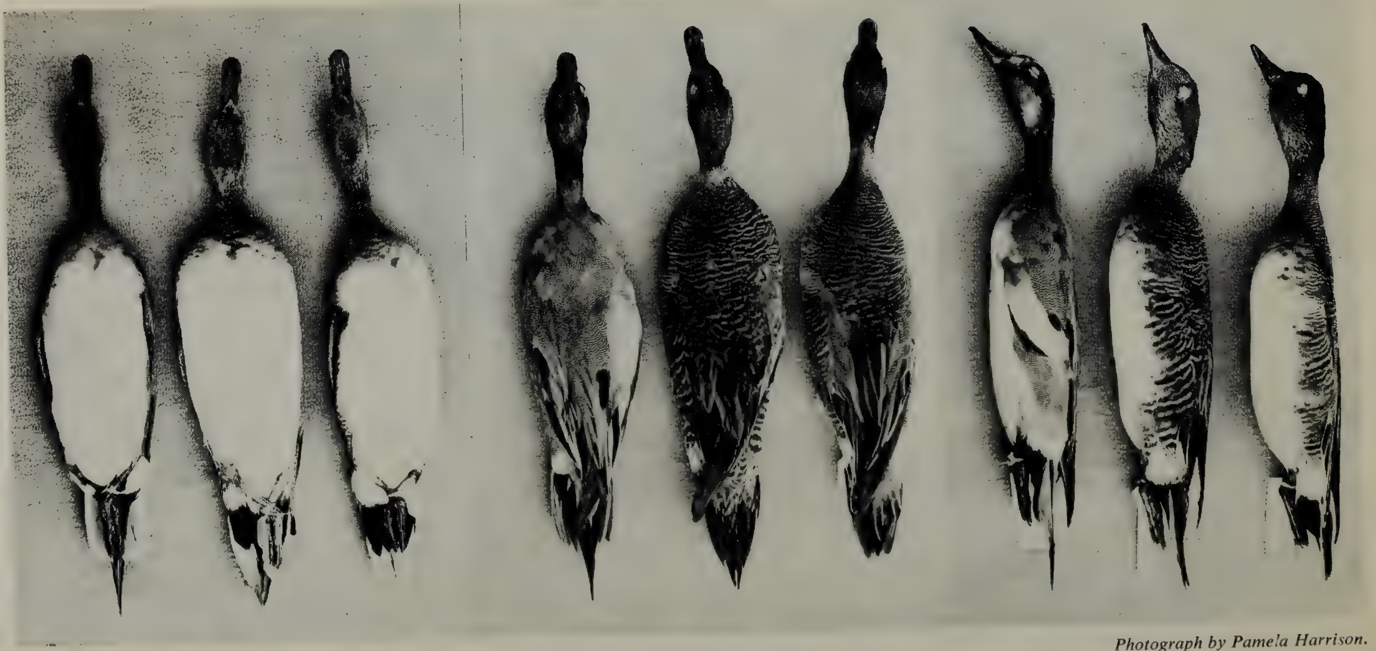
The outward and visible disturbances of the sexual dimorphism are but one side of the picture, while the exposure of reversionary characters which are often quite foreign to either of the parent species has been commented on by the writer in previous communications and present, in his opinion, by a striking type of discontinuous variation, evidence of affinities in avian systematics and evolution.

The history of these three birds is as follows: they were hatched in the spring of 1962 and were reared by Mrs. V. Burnett. The direction of the cross is known, the male parent being a Northern Pintail (*Anas acuta acuta* L.), and the female a Eurasian Wigeon (*Anas penelope* L.).

One of the three siblings herein described fits in very well with the generally accepted view that the progeny of an interspecific cross can appear broadly as an intermediate between the two parent species.

This individual, an anatomical male, was culled on 2nd January 1966, and as can be seen from the plate is in all respects intermediate in its characters except in the anomalous facial pattern which shows the condition of "bimaculation", a character often associated in hybrids in which Pintail, Wigeon, Shoveler (*Anas clypeata* L.) and Teal (*Anas crecca* L.) participate.

The other two specimens, both of predominantly female-type, were culled on 20th January and 11th April 1966. All three were therefore adults and it was not thought that their plumage would have undergone any further significant change. Comment upon the characteristics of the two female-type birds is made below since in their cases, not only are the factors concerned with the balance and maintenance of sexual dimorphism concerned, but also issues relating to the determination of sex arise.



Photograph by Pamela Harrison.

Examples of sexual mosaicism in two of three sibling hybrids between a ♂ Northern Pintail and a ♀ Eurasian Wigeon.
On left an anatomical male, centre female phenotype with ovarian agenesis, on right female phenotype wih ovarian agenesis and the subject of an adrenal mass.

The anatomical state of these three birds must now be considered. The anomalous drake of 2nd January presented a normal arrangement of the genito-urinary tract, having paired small testes consistent with the resting stage, although it would be unwise to assume that had the bird been culled during the period of reproductive activity the gonads would necessarily have been found to be normally functional.

In the cases of the two other siblings which present largely as female phenotypes, in both a state of ovarian agenesis was found, although in both an attenuated oviduct was present.

As has already been stated both specimens show a variable admixture of male feathering, while anatomically one, the bird of 20th January, in place of the normal paired adrenals showed an adrenal mass of approximately 1.0 x 0.5 cm., of a bulk of possibly five times that of the normal paired adrenals of the other female-type sibling and this bird, as can be seen, has very much more extensive male feathering. This mass on section was seen to be composed largely of cortical cells.

One can, I think, reasonably postulate that, while adrenal virilism does not enter into this case, the presence of an adrenal mass, no matter how small, as distinct from the relatively much smaller bulk of paired normal adrenals could well account for the elaboration of sufficient androgen to induce the more extensive male plumage the specimen shows, by comparison with the other sibling of 11th April, which on dissection was found to have normal adrenals.

These two instances can in fact best be described as sex mosaics. Crew (1964) comments: "Sex mosaicism, gynandromorphism, hermaphroditism and intersexuality are all terms used to define this mixture of male and female architecture and characterisation, but between them there are slight but significant differences of meaning". The suggestion that the term hermaphroditism should be used for individuals equipped to function both as male and female either at one and the same time or at different times has much to recommend it, and could well be restricted to organisms in which functional hermaphroditism is normal as in many invertebrate forms.

To revert to the plumage characteristics shown by the two female-type birds. The most striking overall feature of the two is that in both the plumage is typically that of the ♀ Pintail and bears comparatively little resemblance to that of the ♀ Wigeon.

For convenience the characters exhibited by these three sibling hybrids can be listed as follows: the symbols used to record the characters being, W = Wigeon, P = Pintail, ≷ = intermediate between Wigeon and Pintail, A = anomalous, > W = towards Wigeon, > P = towards Pintail. Note the general overall morphology is described here regionally while minutiae are not given except in the case of the anomalous drake. It is believed that this treatment will prove most useful particularly in connection with the plates.

Date	*Anatomical sex and age*	*Sex by plumage*	*Phenotype and comments*
2.1.1966	♂ adult	♂	P ≷ W. Anomalous facial pattern – bimaculation

Regional Plumage Description:

Underparts: Back and mantle: Vermiculated much as in Wigeon. *Long scapulars:* Innermost finely vermiculated on outer vanes, along shafts and on inner vanes dusky sepia. Two blackish flashes at outer edges of innermost scapulars: outermost, edge pale grey on outer vanes, rest of feather velvety black, along shaft narrowly pale grey. *Rump:* Grey but vermiculation finer than on back and mantle. *Upper tail-coverts:* As rump but paler, longest, inner vanes buffy-grey: outer vanes velvety black. *Rectrices:* Central pair dusky sepia prolonged to form "pin". Rest brownish-sepia, narrowly edged pale ash.

Underparts: Breast shield: Vinous as in Wigeon, rest of underparts white, but over belly very pale and fine greyish vermiculations. *Under tail-coverts:* Black. *Rectrices:* Central pair dusky, rest silvery-grey.

Flanks: Vermiculated greyish. At root of tail, palest yellowish-white.

Wing: Lesser and median coverts: Almost uniform pale greyish, lightly speckled whitish. *Greater coverts:* Grey, edged with brownish-cinnamon, a Pintail character. *Speculum:* Green, lower half velvety black, narrowly edged ashy-white. *Bastard wing and primaries:* Sepia, shafts whitish, inner vanes pale sepia. *Under wing-coverts:* Grey, speckled whitish. *Axillaries:* Ditto, paler.

Head and Neck: Forehead: Dark chestnut. *Crown:* Paler chestnut striated finely with sepia, at edges of crown to occiput margined ash and sepia striations. *Nape and upper half of neck:* Dusky green, lower half of neck grey very finely vermiculated whitish. Lores and sides of face clay-coloured, between eye and base of bill finely speckled dusky. Around eyes coppery-green, lower lids whitish, below this a dusky patch; from there a weak bimaculation running into a broad purplish-black area from chin to root of neck. According to the direction of light incidence the post-ocular area can be made to reflect green or copper.

Date	*Anatomical sex and age*	*Sex by plumage*	*Phenotype, and comments*
20.1.1966	O adult	♀ > ♂	P > W

Regional Plumage Description:

Upperparts: Predominantly ♀ Pintail, in scapular area shows Wigeon vermiculation.

Underparts: Neck and breast-shield > Wigeon ♂. Under tail-coverts black, a character shared by both parent species.

Flanks: Strongly barred brown, sepia and white, some vermiculated.

Wing: Strongly resembles Pintail.

Speculum: Green, bay-coloured tips to greater wing-coverts, a Pintail character.

Head and neck: Head and upper half of neck strongly resembles ♀ Pintail; throat shows a somewhat dusky patch as in ♂ Wigeon.

Date	*Anatomical sex and age*	*Sex by plumage*	*Phenotype, and comments*
11.4.1966	O adult	♀ > ♂	P > W

Regional Plumage Description:

Upperparts: Strongly resemble ♀ Pintail, only very few vermiculated feathers in right scapular region. Two central rectrices somewhat elongated.

Underparts: Breast-shield slightly vinous and strongly barred, an exaggeration of a mutation found in some ♂ Wigeon varieties.

Flanks: Strongly barred as in previous specimen.

Wing: Strongly resembles Pintail.

Head and neck: As in previous specimen but dusky throat patch more pronounced.

Discussion:

As already mentioned these three birds are of the same brood. As adults they would, it is believed, have undergone no further significant change in their plumage. Although in their characterisation two showed a variable admixture of male and female feathering, neither can be classed in the strictly scientific sense as an intersex since they are, in effect, not such anatomically. In the anatomical ♂ of intermediate external characterisation, dissection revealed a normal male genito-urinary tract. Here one must postulate, it would seem, that maleness has been determined and fixed genetically.

In the cases of the two of predominantly female plumage the striking anatomical abnormality shared by both was that of ovarian agenesis, nor was the presence of a right-sided gonad with the characters of an ovotestis demonstrable in either bird: in both a very attenuated oviduct was seen.

It is clear then that anomalies of the secondary sexual characters can arise from different though nevertheless related causes, which add up in the main to the control of such characters partly by endocrine and partly by genetic factors. It is also apparent that in these two cases with predominantly female plumage, the suppression of maleness cannot be ascribed to the effects of ovarian inhibition since both birds showed a state of ovarian agenesis. Indeed Domm (1955) comments "Steinach was responsible for the concept, no longer adhered to by most investigators, of antagonism between the internal secretions of male and female, thus giving hormone action the attributes of stimulating homologous and inhibiting heterolous sex characters." Domm (*loc. cit.*) states further that the role of hormones is controversial, but that the current concept is that the gonads during their embryonic development secrete hormone-like substances which are responsible for guiding the development of sexual characters.

Much recent work has shown that in some species sexual dimorphism is largely determined genetically, and the two cases of female feathering with some male characterisation demonstrate the extent to which maleness can be evoked by extra-gonadal androgen secretion. In this connection it is of considerable interest to note how the bird with the small adrenal mass has assumed a significantly greater amount of "cock-feathering" by comparison with the lesser degree of maleness shown by its sibling with the minute normal paired adrenals.

Our earlier knowledge of secondary sexual characters in birds was largely dependent upon the results of castration experiments, and it was observed that ovariectomy was followed by the assumption by the individual of an imperfect type of male plumage, usually with the development of a right-sided gonad of mixed constitution—an ovotestis—evidence of the bisexual potentiality of some birds. Androgens or oestrogens will restore lost characters in castrated subjects.

Crew (1964) in discussing sex determination in birds comments as follows on sex mosaicism, gynandromorphism, hermaphroditism and intersexuality in birds "In Aves mosaicism has been recorded in several species, the pigeon (Hollander, W. F., 1944); Reeves pheasant (Bond, C. J., 1913; Huxley, J. S. and Bond, C. J., 1934); the turkey (Asmundson, V. S., 1937); the domestic fowl (Cock, A. J., 1954, 1959, 1960); the canary (Crew, F. A. E., and Munro, S. S., 1938); the budgerigar, *Melopsittacus undulatus* (Crew, F. A. E., and Lamy, R., 1935); the bullfinch, *Pyrrhula europaea* (Poll, H., 1909); the chaffinch, *Fringilla coelebs* (Weber, M., 1890) and the Gouldian finch, *Gouldaeornis gouldiae* (Crew, F. A. E., and Munro, S. S., 1938)."

To this list of species can be added the House Sparrow, *Passer domesticus* in which sexual mosaicism was responsible for the naming of such individuals, *i.e.* females showing the assumption of a varying degree of male plumage as *Passer* "*enigmaticus*" (Sarudny, 1903).

As pointed out by Crew (*loc. cit.*) the work of Keck (1934), Danforth and Foster (1929) and Danforth (1932), shows there are clearly three different determinants of such intersexuality. In the Fringillidae and Ploceidae sexual dimorphism is largely due to genetic factors; in fact in *Passer domesticus* Keck (*loc. cit.*) clearly demonstrated that the only character under hormonal control was the black bill colour of the ♂ in its breeding dress and that the injection of graded doses of an androgen produced directly related response according to the dose administered.

Crew (*loc. cit.*) points out that in birds of the "fowl type" sexual dimorphism is largely determined by "humoral factors", as has been abundantly proved by ablation experiments followed by transplantation of gonadic tissues, or the injection of androgenic or oestrogenic substances.

In pheasants, however, the results are not quite so clear and birds treated by the methods outlined above developed a type of asexual or neutral plumage. Recently Morejohn and Genelly (1961) have demonstrated that "plumage differentiation of both sexes in *Phasianus colchicus* is dependent upon genetic as well as hormonal factors, and that the genetic nature of this differentiation is associated with autosomal genes as well as genes in the sex chromosomes".

Crew (*loc. cit.*) continues "No one explanation can possibly accommodate all these instances of mosaicism in birds. In the finches and in some of the fowls the cause appears to be due to the loss of an X chromosome from one nucleus at the first cleavage division yielding an XX/XO sex mosaic, a gynandromorph." Other genetic mechanisms believed to be responsible are gene mutation, the loss of one or more autosomes by elimination or non-dysjunction by a polar body in fertilisation.

These two female-plumaged ducks would appear to present evidence that in their cases the Northern Pintail female-like feathering may be hormonally initiated and genetically maintained subsequently. Obviously no female sex hormone can be held responsible, and neither of the two specimens had developed a mixed type of abnormal right gonad.

In so far as the admixture of male plumage is concerned in the two female-like siblings, this must surely depend upon the varying amount of androgen secreted by the adrenals, for the extent is clearly directly proportional to the amount of extra gonadal androgen secreted.

Domm (1955) in discussing this subject comments in the following terms: "It is necessary here to take into account the role of genetic factors, though it is not entirely clear how they operate in sex differentiation, when they are subordinated to hormonic factors, or what the total consequences of the interaction of these two factors are. The actual mechanisms whereby one sex component predominates over the other in differentiation of the gonad appears to be endocrine in nature. What the genes actually control physiologically, therefore, is intensity of hormone secretion. The gonad component with the relatively greater intensity of hormone secretion determines the direction of sex differentiation."

As a result of various techniques, embryonic transplants and injections, Domm (*loc. cit.*) states that differentiation of the sexes is to be explained "by the intervention of the female hormone; we may also assert that the male hormone, present in both sexes, is dominated by the female hormone".

Clearly, secondary sexual differentiation in birds is not simply a matter depending upon control by hormones. Domm (*loc. cit.*) indicates a controlling influence by the "intervention of the female hormone". It is therefore of more than minor interest that these three sibling hybrids present as (1) a male-type with macroscopically normal male gonads and adrenals and as (2), two female-type individuals. Of the latter two, one has a minimum of male feathering, the other rather more. This is ascribed to the fact that the individual with the greater amount of male plumage was the subject of an adrenal mass of approximately five times the bulk of that of the normal paired adrenals of the other female-type sibling. The condition of maleness is, in both cases, believed to be due to androgenic hormone elaborated in the adrenals.

Both the female-type individuals were found to be cases of ovarian agensis, and it is believed therefore that in them, the predominantly female-type of plumage must be of genetic fixation since in the absence of ovaries in adult life female hormone would not be secreted to maintain the type of plumage, *i.e.* in effecting suppression of male feathering. Amadon (1966) states "After gonadectomy in the female Mallard (*Anas platyrhynchos*) the bird acquires a male type plumage at the next molt. This plumage is genetically determined and is normally inhibited in the female by sex hormones."

The findings in the two female-type birds of these three siblings would seem to present further evidence in support of the view that was previously held of the supreme dominance of the female sex hormone in such cases. As Johns (1964) points out "previous studies have shown that a wide variety of hormones may be responsible for the differences between male and female plumages in different species of birds."

Domm (*loc. cit.*) stresses the fact that embryonic sex hormones are of much greater potency than are those of the adult organism, and it is possible that this factor may well have been operative at that period in the determination of the sex of these two individuals, and that the female characterisation could have been determined hormonally at that stage and that with the subsequent failure of ovarian development the female state was then maintained by genetic factors. Domm (*loc. cit.*) states that "In vertebrates sex is genetically determined, however, it is not fixed and irreversible despite the zygotic determination: all gradations from typical female to typical male are possible."

Despite this, since, as pointed out by Morejohn and Genelly (*loc. cit.*) autosomal genes are involved in sexual dimorphism, a ready explanation is available for the development of mosaicism of the male-type in these two female-type individuals described above, under the influence of extra gonadal androgen.

Armstrong and Marshall (1964) in "Intersexuality in Birds", in an article by Taber on birds without gonads, comment as follows:—

"Scattered and frequently anonymous reports have been made of gonadless birds. Riddle (1925 b) described sixteen hybrid pigeons which had no gonads and stated that there was evidence that they had never developed gonads. Other gonadless birds have been reported in ducks, pheasants, and hybrid doves (Riddle and Johnson, 1939). When anatomical details were given in these reports, the situation seemed to be the same; no gonads, both right and left undeveloped Mullerian ducts, and a general masculine appearance. This agrees with the observations following experimental castration of avian embryos. These birds without gonads comprise a potentially fascinating group. Recent studies of the Turner syndrome, or gonadal agenesis, in man have shown that the majority of such individuals lack one of the sex chromosomes, i.e. their genotype is XO rather than XX or XY, and their general phenotype is that of the neuter of female sex (XX) in mammals. The gonadless birds also assume the neuter or male sex (ZZ) characteristics in birds. Is such a gonadless bird an avian "Turner"? Is its genotype ZO? Here, again, the Barr and "squash" techniques probably would provide valuable information."

Summary:

Three adult hybrid sibling Pintail X Wigeon are described: one an anatomical ♂ fits in with the general interspecific intermediacy in characters in such cases, though showing anomalous reversionary characters in the head and neck. Two female-feathered individuals show ovarian agenesis, while one additionally was found to be the subject of a small adrenal mass, which has provoked a greater amount of male plumage than in the sibling with normal adrenals.

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To Dr. Jeffery G. Harrison I am once again indebted for helpful criticism and comments.

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A new race of *Aplonis panayensis* (Scopoli) based on eye colour

by HUMAYUN ABDULALI

Received 10th September, 1966

When Hume in 1873 (*Stray Feathers*, 1: 480) described the Andaman race of the Glossy Stare, now known as *Aplonis panayensis tytleri*, he referred to great variations in the colour of the irides in the 60 specimens which he had obtained from almost every island in both the Andamans and the Nicobars. The colour of the irides in adults, he said, varied "from white, opalescent white, fleshy white, and pale pink to brown, deep red-brown, and deep orange." He implied that these were indiscriminately mixed-up, but according to Richmond (1903 *Proc. U.S. Nat. Mus.* 25)

Abbot & Kloss found that the birds from Car Nicobar had brown irides, while all from the central Nicobars and from the Great and Little Nicobar had white ones. I have referred to this in my paper on the birds of the Andaman and Nicobar Islands (*J. Bom. nat. Hist. Soc.* 61: 552) but was then unable to offer any comments. I visited the Nicobars again this year and 19 specimens obtained in Great and Central Nicobar had their irides white, while six from Car Nicobar had them brown. Many others in all these places and around Port Blair were observed through binoculars and the difference in eye colour was confirmed.

I have been unable to link this with any difference in any other character, though there is a slight downward cline in size of wing and bill as one proceeds southwards.

In several instances, birds in immature plumage and of both sexes were shot from the same flock and they all had their irides of the same colour as the adults.

Under the circumstances, there can be little doubt that the Glossy Stare from the Andamans (which is the type locality of *tytleri*) and from Car Nicobar can be separated from those from the Nicobar Islands further south by the former having their irides brown and the latter white.

I therefore name the birds from Kamorta, Trinkut, Nankauri and Great Nicobar

Aplonis panayensis albiris subsp. nov.

Type: No. 22410 in the Bombay Natural History Society's collection. Collected by Humayun Abdulali at Campbell Bay, Great Nicobar, 1st March, 1966.

Co-types: Nos. 22408, 22409 and 22411-22426, 11 males and 7 females collected in the Central Nicobars (10) and in Great Nicobar (8).

As implied earlier, I have little doubt that this form occurs over all the other islands in the Nicobars south of Car Nicobar, but since racial differences have arisen in this species on adjacent islands, the identity of birds from Nicobar islands other than those mentioned by me may be determined by future observers.

Nest and eggs of *Buccanodon anchietae*

by Robert B. Payne

Received 15th November, 1966

The Yellow-headed Barbet, *Buccanodon anchietae* Bocage, is a little-known bird of open woodland in central Africa. No nest or eggs of the species appear to have been described, although Benson and White (1957: 160) list an unpublished record of five young in a nest in northern Zambia. On 23rd September 1966 a nest was found at Lukolwe Mission in north-western Zambia (13° 10′ S, 22° 49′ E). A pair of the barbets perched near a nest hole 18 feet high in a dead tree. Only one visit to the hole was made by a barbet in five hours of observation. The birds spent their time perched lethargically on limbs. Most of the time the two were together, and when one left the other remained until it returned. Courtship feeding with the transfer of unidentified food was seen once, and as in several instances of display on this day the bird offering the food bobbed its head and body up and down as it faced the other bird. The second barbet bobbed up as the first bobbed down. The display continued at a rate of two bobs per second for four or five seconds. On the next day a single barbet was seen in the tree most of the time, and no displays were seen in four hours. The only vocalization heard from the barbets was a soft "churr" given after a Little Banded Goshawk (*Accipiter badius*) flew into the nearest tree. The pair of barbets roosted together in the nest this night even though the behaviour of the birds suggested that incubation had begun. One flew into the hole shortly after sunset and peered out at intervals, and the second bird joined it 20 minutes later. The two barbets were collected in late afternoon on the following day.

The nest hole was round and only slightly larger than a barbet. From the opening a tunnel slanted in and down at a 30° angle with the limb. At a depth of ten inches the tunnel broadened into a pear-shaped nest chamber, which was eight inches deep and four inches in diameter. In cross section this chamber was similar to two overlapping circles of the same size as a pair of vertical ridges partially partitioned the cavity. The floor was covered with fine chips of wood.

The four slightly glossy, white eggs measured 23.2 x 17.7 mm., 22.7 x 17.6 mm., 24.0 x 17.6 mm., and 22.7 x 17.7 mm. Two eggs weighed 3.8 and 3.7 gm. The eggs showed well-developed primitive streaks on the surface of the yolk, indicating that they had been incubated for 24 to 48 hours.

The male barbet weighed 43.4 gm. and the female 48.0 gm. Both had bark beetles in their stomachs: one bird was seen to catch flying beetles in the air from its perch on the nest tree. The yellow face of the female was stained with mulberry juice, and in the lower intestine of the male were two pits of drupe fruits about 3 mm. in diameter. These fruits came from a green, leafless, herbaceous vine known in the Lovale language as "lwa-vava". The testes measured 6 x 5 and 4.5 x 4 mm. The ovary showed only small whitish follicles of 2 mm. or smaller and also four post-ovulatory follicles ranging in length from 2 mm. to 4 mm. These corresponded in number and size to a clutch in which the last egg was ovulated two days previously.

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Some Antillean coots *(Fulica)* in the Cambridge University and British Museums

by Allan R. Phillips

Received 28th November, 1966

Recently Brodkorb (1965) described *Fulica podagrica*, "of apparently late Pleistocene age", from Barbados, West Indies. He drew attention to the need to re-examine the specimen from that island reported as *F. americana* by Feilden (1889), which, however, he thought "may no longer be in existence". This was therefore among the specimens I sought on my recent visit to England, made possible by a grant from the Frank M. Chapman Memorial Fund of the American Museum of Natural History.

Fortunately Mr. C. W. Benson discovered this historic bird in the Cambridge University collection, and was so kind as to bring it to London along with two other coots of interest. Here I compared them with the series in the British Museum (Natural History). The latter also has a Barbados coot, taken by Schomburg and determined, along with two from Grenada, as *F. caribaea*, by James Bond; unfortunately all three are unsexed. Feilden's bird is a ♂ taken 11th August 1888 in Graeme-Hall Swamp.

The two Barbados *Fulica* and the St. Vincent ♀ (C. E. Lister in Cambridge University collection) are evidently normal *caribaea.* I perceive no difference from *F. a. americana* except the frontal shield. The supposed difference in the colour of the outer web of the outer primary (Ridgway and Friedmann, 1941:222) I cannot appreciate. The other two *F. caribaea*, from Grenada, have rather large feet, which is of particular interest since the heavy foot characterizes *F. podagrica.* This is more a matter of thickness than of length; they have the tarsus 63 mm. (both birds), the middle toe without claw 74.5 and 77.5 mm. The tarsometatarsus impresses me as heavy, but I cannot measure the bone in the skin. The maximum depth of the scalation, in the central part of the tarsus, is 10.6 and 9.5 mm., compared to a maximum of 9.2 or a bit more in ♂ *F. a. americana.* The Barbados *caribaea* measure 8.0 (♂) and 9.0; the St. Vincent ♀ about 8.3 mm. (All the specimens discussed herein are in adult, definitive plumage.) A series of skeletons of known age, sex, and external measurements should be instructive.

The third Cambridge University *Fulica* compared is a ♀ from Greenock, St. Ann's, Jamaica, April 1859 (W. Osburn No. 105). It was recorded as *F. americana* by P. L. Sclater (1861:81), but this was before variation in Antillean coots had been worked out and the reference was transferred without explanation by Ridgway and Friedmann (1941:221) to the supposed race *F. a. grenadensis.* The frontal shield is, to be sure, quite swollen, as might be expected in April; but the bill (depth at base *ca.* 15.5 mm.) is actually less heavy than in many North American specimens, and is no more wrinkled. I can only call this specimen *F. a. americana* in any case. Ridgway and Friedmann call *grenadensis* "doubtfully distinct from *F. a. americana*", while Bond (1940) synonymizes it.

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CONTRIBUTORS

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Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov., sp. nov., subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

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DINNERS AND MEETINGS FOR 1967

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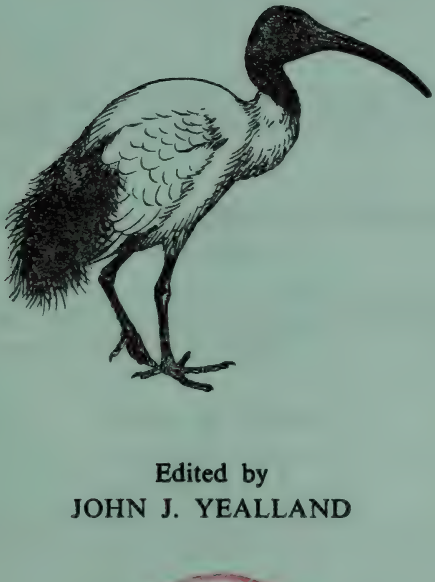

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The six hundred and forty-first meeting of the Club was held at the Rembrandt Hotel, London, on the 21st February, 1967.

Chairman: Dr. J. F. Monk

Members present 23; Guests 11.

Mr. R. F. Porter spoke on the birds seen by him and his companions during a seven months' stay in Turkey, illustrating his talk with coloured slides.

Whereabouts of the type specimen of *Anthreptes singalensis bantenensis*

The type specimen of *Anthreptes singalensis bantenensis* Hoogerwerf, Bull. Brit. Orn. Club, 1967, 87, p.5 is at present in the Museum of Zoology, Bogor, Indonesia, and its number is 23.859.

What is *Ifrita?*

by MICHEL DESFAYES

Received 29th November, 1966

In Vol. 10 of Peters' Check-list, the species *Ifrita kowaldi* is listed in the subfamily Orthonycinae (Muscicapidae). The fact that the bird is an inhabitant of the low undergrowth and apparently feeds on the ground has led systematists to place it near other ground-feeding species found in the same area. An examination of specimens in the Smithsonian collections leads me to believe, however, that it is more closely allied to some of the Niltavas. The colour and texture of the crown feathers are very much like that of the *Niltava grandis* and *N. sundara;* the general pattern and colour and also the underwing pattern are very much like those of the female of *N. grandis*. It has a white supercilium and lacks the blue pectoral side patches of the latter. Because of its much shorter tail, the bird is shorter than *sundara* but is stronger in build like *grandis*. The main difference is in the length of the tarsus which is 28 mm. as against 23–25 and 21.5–22.5 for *grandis* and *sundara* respectively, and the tail length which is 54 only as against 94–99 and 62–72. The length of the wing is, in the same order as above, 80–90, 108–112 and 80–85. Mayr and Rand (1937, p. 114) wrote about its habits: "Besides searching for food on the smaller limbs and even on fallen logs, it very often behaves in a creeper-like fashion, or an almost nuthatch-like manner, climbing up the trunks of saplings and trees, and exploring the branches of the tree tops for food. The moss on the trees is not neglected and the Blue-capped Babbler often digs vigorously into it for its prey. On the horizontal branches, it creeps along the top and sides, rarely venturing onto the underside where it has difficulty in maintaining a hold. To examine the under part of the branch it more often hops along the branch peering down from one side, then from the other, hanging head downward, but not upside down."

It must be noted here that *N. grandis* is also a bird of the low undergrowth and "flies and skulks along close to the ground" (Sálim Ali and Ripley), or is "seen often in low bushes or even on the ground" (Sálim Ali). Robinson and Kloss (1918) note that it is much more terrestrial than most flycatchers. It also nests on or near the ground. Over one hundred nests found by Baker (1933) have been built in holes in dead tree stumps, under fallen logs, among large boulders or among the great roots of some forest tree. In Indochina, it is found above 1,000 metres. "Ifrita" is found in New Guinea from 1,800 up to 3,600 metres, a hint of its northern affinities.

In view of the differences found within the genus *Muscicapa, sensu latissimo*, and even in the genus *Niltava* if maintained, I believe that the differences mentioned above do not warrant generic separation of this bird which should be called *Muscicapa* (*Niltava*) *kowaldi* and placed near *Muscicapa* (*Niltava*) *grandis*.

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Affinities of *Cataponera*

by Michel Desfayes

Received 23rd December, 1966

This babbler has no close relative in its native Celebes, a likely reason for its uncertain relationship. Meyer and Wigleworth (1898) say that "it is very like certain blackbirds in appearance, though the shape of its wing as well as the peculiar superciliary stripe of black, at once shows that it has no very real near affinities with *Merula* or *Turdus*". It is evident that the Black-browed Babbler is not a thrush; its thick, rounded rufous tail, bill shape and general proportions are unlike any Turdinae. Its similarity to *Garrulax* impresses one at once. Hartert (1896, p. 70) erected for it the genus *Cataponera:* "Genus ex affinitate generum *Garrulax*, *Rhinocichla*, *Allocotops* dictorum, sed cauda fere aequalis distiguenda". The last two genera are now merged with the first. "*Rhinocichla* strikes us as being most like *Cataponera*" (Meyer and Wigleworth). The present writer feels that the nearest geographical kin of a species is not necessarily its closest relative. In coloration, *Cataponera* most resembles *Garrulax delesserti* and *G. caerulatus*. The reasons for not following Hartert and dissociating the Black-browed Babbler from the Timaliinae are obscure. I hope that it be included in the genus *Garrulax* and kept in the vicinity of the two last mentioned species. With them, it also shares a tendency of having bare orbital skin.

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A new form of *Garrulus glandarius* (Linn.)

by ANDREW KEVE

Received 25th February, 1966

A black-capped form of Jay, *Garrulus glandarius*, occupies a very restricted area, being found only in the immediate vicinity of Istanbul. The small woods and orchards where it nests are isolated from the larger woods to the north and west by an area of arid country and on the east and south lies the sea.

Through the kindness of Mr. J. D. Macdonald of the British Museum (Natural History) and of Prof. G. Niethammer of the Zoological Institute and Museum A. Koenig, Bonn, I have had six skins of this little-known population for study, and I have been able to compare them with eight from Asia Minor, five from the Caucasus, three from the Crimea, one from the island of Mitylene, one from the island of Chios, three from Lenkoran, one from Iran and eight from Israel.

The Istanbul jay closely resembles birds from the Crimea; it is somewhat paler and therefore different from those of Asia Minor; it is also very variable. In some specimens the cap is divided by broad blacklongitudinal striations; in others it is uniformly black. The female from "Tash-Cupri" (Pearce locates it "near Constantinople") belongs to the first group and its mantle is somewhat greyish, approaching in this respect *G. g. graecus* Kleiner. A male and an old specimen from Cekmece both have a uniformly black crown, somewhat similar to birds from Asia Minor: the mantles are more reddish-vinous as in *G. g. ferdinandi* Kleiner, the race inhabiting the Istrandja Hills to the north-east. The underparts are slightly whiter as in specimens from the Crimea, Mitylene, Chios and the lightest phases of the Caucasian—Asia Minor population. A moulting specimen is rather more cinnamon-coloured on the mantle. The old specimen from Cekmece has a large white area on the cheek, similar to the lightest phase of the Caucasian birds. The close resemblance to the Crimean population is a good example of convergence. In general the Istambul population shows the same head characters as all the other subspecies inhabiting the contiguous distributional zone of the Colchican Black-capped Jay group.

The new form is named by me on behalf of my old friend Dr. M. Vasvari in honour of Dr. Hans Kumerloeve and Professor Guenther Niethammer:

Garrulus glandarius hansguentheri subsp. nov.

Type: ♀ 8th September, 1877, Tash-Cupri, near Constantinople. Pearce Collection, in British Museum (Natural History). Reg. no. 1886. 12.1.22.
Paratype: ? sex. 1st March, 1947. Cekmece, Korswig Collection in Museum A. Koenig, Bonn.
Other specimens: ♂ 8th September, 1877, Tash-Cupri, Brit. Mus. Nat. Hist.; a moulting adult and four immature, summer, 1963, Mus. A. Koenig.

ACKNOWLEDGMENTS

I wish to express my thanks to Dr. James Harrison for his help with my manuscript; also for exchange and loan material other than the above mentioned. I should also like to make grateful acknowledgment to Dr. N. I. Burchak-Abramovich, Dr. E. Etemad, Dr. W. Goetz, Ing. H. Hovel, Prof L. A. Portenko, Mr. I. Regós, Dr. G. Rokitansky, Dr. L. S. Stepanjan, Mrs. M. A. Sudilowskaja, Dr. M. A. Woistwensky and Mr. P. Zervas.

On the nest and eggs of the Cape Rook, *Corvus capensis* Lichtenstein, in Ngorongoro, northern Tanzania

by A. M. Morgan-Davies

Received 17th December, 1966

The distribution of the Cape Rook in East Africa has been given by Mackworth-Praed & Grant (1957) as southern Sudan to Abyssinia, Eritrea, Somaliland, Uganda and central Kenya. Thomas (1960) records this species nesting in the caldera of Ngorongoro and conjectures it to be a new record for Tanzania. At the time Thomas made his observations, the nests were either empty or contained chicks and no record was obtained of the eggs or a detailed description given of the nest.

During November 1966, I spent ten days on the floor of the caldera of Ngorongoro and collected three complete clutches of this species. The description of the eggs given by Mackworth-Praed & Grant are "salmon pink with purple and lilac blotches, measuring about 40 x 30 mm." Whereas this description probably refers to eggs obtained from the species' northern range, the colour of the eggs obtained from Ngorongoro were more of a very pale pink with brown, purple and lilac blotches. The measurements of nine eggs from three clutches averaged 46 x 30 mm. Clutch sizes were 2, 3 and 4.

Although the nests of this species are basically like those of other Corvidae, they are prominent in the neatness of their construction. The 14 inch bases of the nests are made of rough twigs and coarse grass; above this is a 1 to 1½ inch layer of compacted elephant and/or rhinoceros dung; on top of this is a ¾ inch thick layer of well matted hair (Wildebeest and Thomson's gazelle) and fine grass. The caldera of Ngorongoro has one of the greatest concentrations of wildlife in East Africa and full advantage is taken by the Cape Rook of this abundant source of suitable nesting material. The inside diameter of the nest-cup is about 6½ inches and the depth about 3½ inches.

In all instances the well concealed nests were located at the terminal ends of the branches of fairly low and thickly foliaged *Ficus* trees, and there was no attempt at colonial nesting. In one instance only were two nests found in the same tree. Three of the nests were found in the same trees as those recorded by Thomas and it appears possible that this species, at any rate in Ngorongoro, may use the same nest each year. I was Game Warden at Ngorongoro at the time Thomas made his observations and I would consider there has been an appreciable increase in this species over the past eight years, as has been recorded elsewhere in East Africa by Mackworth-Praed & Grant.

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Seafowl and land migrants observed on a voyage, London to Capetown, 26th April—12th May 1966

by Charles R. S. Pitman

Received 4th August, 1966

GENERAL. The day to day details of this voyage—the only port of call was Las Palmas, Gran Canaria—are with the Royal Naval Bird Watching Society. At this season the main northerly movement of land birds was over and it was not anticipated that other than a few belated stragglers would be seen, possibly the Swallow, *Hirundo rustica* and the Kestrel, *Falco tinnunculus*, off the "bulge" of Africa.

Seafowl were scarce or absent throughout the voyage except for three days (2nd to 4th May) off the "bulge". North of the Equator the petrels and shearwaters which breed on the Canary and Cape Verde Islands and in the British Isles (Manx Shearwater) had evidently not returned to their breeding grounds, and south of the Equator (and nearing Capetown) the hordes of other species of petrels and shearwaters which would be much in evidence some weeks later were conspicuously absent not having returned from their southern and Antarctic breeding grounds.

Small flocks of distant terns, seen off the "bulge" and the southern African coast, were too far off to identify. Seafowl were most plentiful in the vicinity of the best fishing grounds and most active in the late afternoon. Observations were rarely made between 1400 and 1700 hours.

SHIP'S POSITION. The most rewarding days for viewing seafowl were 2nd, 3rd and 4th May, off the "bulge", north of the Equator, and 11th May, the day before dawn arrival at Capetown.

2nd May—at noon just south of the Tropic of Cancer, and at 1730 westerly from Cape Blanco.

3rd May—at 1240 passing Cape Verde and Dakar and from 1700—1830 westerly from Portuguese Guinea.

4th May—at noon due west of Freetown, Sierra Leone.
5th May—at noon 150 miles north of the Equator.

BLANK DAYS WITHOUT SEAFOWL. 28th April (Bay of Biscay), 30th April (westerly from Mogador), 5th May (2° 42′ N.: 10° 36′ W.), 7th May (8° 33′ S.: 2° 19′ W.) and 8th May 14° 04′ S.: 6° 07′ E.); all are noon positions.

ALMOST BLANK DAYS. 29th April (1 Lesser Black-backed Gull), 1st May (1 Yellow-legged Herring Gull), 6th May (1 Sooty Tern) and 9th May, small distant flock White Terns at 1355 (19° 26′ S.: 6° 07′ E.). So, out of 15 days for observing seafowl, five were blank and four almost blank, and omitting the 27th April (the English Channel and breeding resident gulls) and 10th May (only 1 Wandering Albatross and 1 Black-browed Albatross), there were only four days on which seafowl were either seen continuously or in quantity.

LAND MIGRANTS. As expected, off the "bulge", a Swallow was perched in a dark corner on board at dusk on 3rd May, and another on 5th May at 0920 was flying northerly close by the ship. On 3rd May a Kestrel was resting in the afternoon on the central superstructure.

The day before reaching Las Palmas a small passerine was seen on board most of the daylight hours, though I only saw it at about 1700 hours just before it departed northerly after having had some 8 to 10 hours rest.

But the most extraordinary assisted passage was afforded an African Laughing Dove, *Streptopelia senegalensis*, a bird with which I had been familiar in Africa for thirty years and which regularly nested in my Entebbe garden, in Uganda. At 0925 on 28th April, when we were still in the Bay of Biscay, it was observed closely for a brief period flying about the aft well-deck, and presumably the same bird, was seen again at 1230 on 30th April, when the ship's position was westerly from Mogador. It was again flying about the aft well-deck and for a time was settled enabling once more close observation; it soon disappeared and presumably returned to Africa. Recent storms of extreme violence along the west coasts of Morocco, Portugal and Spain could account for this dove's occurrence so far away from its normal habitat.

SEAFOWL. Seafowl are separated into:— (1) Resident species; (2) Migrants, *to* their northern breeding grounds; and (3) Migrants, *from* their southern breeding grounds. They are each listed in the order in which they were first seen.

(1) *Resident species*. HERRING GULL, *Larus argentatus*. On 27th April, plenty of adults following the ship down the English Channel, from near Dover to well past the Isle of Wight.

LESSER BLACK-BACKED GULL, *Larus fuscus*. On 27th April, half-a-dozen following at 1600 hours onwards, this number by dusk had increased to about three dozen, all adult. On 29th April, at 1820, when westerly from Cape St. Vincent (though not in sight) one adult followed briefly and then flew northerly. I suspect it was "ship-hopping", as there was much shipping in the vicinity.

YELLOW-LEGGED HERRING GULL, *Larus cachinnans atlantis*. A solitary example only seen in Las Palmas harbour, between dawn and 1400 hours.

SOOTY TERN, *Sterna fuscata*. On 2nd May singles were seen very close respectively at 0930 and 1730, but quickly disappeared. Another noted at 0830 on 6th May, about 2° south of the Equator, flying mast high; presumably from Ascension Island.

BROWN BOOBY, *Sula leucogaster*. Between 1710 and 1745, on 2nd May, westerly from Cape Blanco, six were seen, and if any movement was indicated it was northerly. Three hours prior to passing Cape Verde (at 1240), on 3rd May, one or more which may or may not have been the same bird—actually four separate sightings at various times, distant and close. Later in the day, at 1250, an immature bird was observed flying around fishing canoes off Dakar. All the others were adult. It is worth mentioning that outward bound off the "bulge", on 15th June 1960, two adults were seen at 1605 (noon 12° 44′ N.: 17° 13′ W.) and four at 1750: homeward bound, on 16th July 1960, one was seen at 0700–0705, half-an-hour after passing Cape Verde.

BLUE-FACED BOOBY, *Sula dactylatra*. On 3rd May, at 1800–1810, one skimming the water close to the ship and moving southerly, but evidently fishing; the bluish bill and markings differing from those of the Northern Gannet, *Sula bassana*, clearly distinguishable. Another (presumed), in subadult plumage, though too far away for accurate identification, flying north at 1350 on 4th May, slightly south of westerly from Freetown.

CAPE GANNET, *Morus capensis*. At 1550 on 11th May (arrived Capetown at dawn 12th May) one close to ship; two other adults had been previously noted that day, but distantly.

(2) *Migrants, to their northern breeding grounds.* These breeding grounds are north of the Equator.

SABINE'S GULL, *Xema sabinii*. For three days a steady northerly movement, low over the water, varying in intensity from singles and small groups of two, three and four to flocks of fully a couple of hundred individuals; there was much settling on the water. From 1720–1745 on 2nd May many hundreds seen. Next day (3rd May), between mid-day and 1300 hours, at least three dozen around fishing canoes off Dakar; and more seen, totalling another three dozen, that evening from 1725 to 1915—several were following till as late as 1915, when the last observation was made; not previously observed following the ship. Between 1015 and 1020, on 4th May, when due west of Freetown, two small parties, respectively six and sixteen, slowly moving northerly.

BLACK TERN, *Chlidonias nigra*. Observed on 2nd, 3rd and 4th May, moving steadily north, flying low over the water and characteristically scattered. Many hundreds were seen on 2nd May between 1720 and 1745; about sixteen at 1725 on 3rd May; and at 1830 on 4th May several were following an active shoal of ? tunny—also with them were some larger unidentified terns.

GREAT SKUA, *Catharacta skua skua*. One observed closely and briefly at 1730, on 2nd May, unmistakable from size and markings.

ARCTIC SKUA, *Stercorarius parasiticus*. One close at 1735 on 2nd May, when coloration, markings and pointed elongate centre tail feathers most noticeable. It was the "intermediate" phase of the Arctic Skua and was certainly not the Long-tailed Skua.

POMARINE SKUA, *Stercorarius pomarinus.* On 3rd May, from 1705 to 1830 (no observations between 1400 and 1700 hours), four of these handsome birds were seen again and again at very close quarters as they followed the ship; three were light phase birds and one dark phase.

The "twisted", elongated, central tail feathers were conspicuous. One made a most spectacular swoop down to the water and for a while all four were settled in a group on the water.

STORM PETREL, *Hydrobates pelagicus.* This tiny petrel was first seen, in hundreds, on 3rd May between 1700 and 1830 following the ship (no observations from 1400 to 1700 hours), together with many Wilson's Petrels (referred to in the next section); in fact these birds following closely and distantly were in such numbers as I have never previously witnessed. The maximum at any one time must have been at least 300 to 400, the majority Storm Petrels, which were distinguishable from Wilson's Petrel by their smaller size, different fluttering flight and a tendency to settle frequently on the water in dense dozens to well over one hundred birds. On 4th May two were following closely at 1750, but did not remain long.

LITTLE TERN, *Sterna albifrons.* Two couples (were they in pairs?), still in winter plumage, were seen on 4th May, between 1630 and 1635, not far off moving northerly and flying fairly high. Later the same evening, at 1705 and at 1750, two more couples, believed to be this species were seen, but not near enough to identify with certainty.

(3) *Migrants, from their southern breeding grounds.*

WILSON'S PETREL, *Oceanites oceanicus.* It is possible that those seen following all day on 2nd May (eight to two dozen approximately), several from 0925 to 0945 on 3rd May, and about eight flying around fishing canoes off Dakar between noon and 1300 hrs. the same day, may have been non-breeding birds which had remained in these waters. But it was between 1700 and 1915 on 3rd May that dozens of this species, sometimes totalling over one hundred, were observed with the fluttering hundreds of Storm Petrels, and a few were still following at 1915 when it was nearly dark and observations ceased. The last to be seen were six following at 1840 on 4th May.

WANDERING ALBATROSS, *Diomedea exulans.* The first albatross, a subadult of this species was observed from 1110 to 1130 on 10th May, but did not remain long. The ship's position at mid-day was due west of Luderitz, S. W. Africa (25° 05′ S.: 10° 43′ E.). On 11th May, an adult and a few subadult were observed in the a.m., but all had disappeared in the early p.m. (noon 30° 34′ S.: 15° 29′ E., well south of Port Nolloth).

BLACK-BROWED ALBATROSS, *Diomedea melanophris.* A single adult first seen from 1615 to 1635 on 10th May. Next day (11th May) several, both adult and subadult, followed throughout the day, often flying very close, but all had disappeared by 1730.

ANTARCTIC SKUA, *Catharacta skua antarctica.* On 11th May a few of these skuas—varying in numbers from two to five, but mostly four—accompanied us all day, often flying very close. Outward bound, on 22nd June 1960 (noon 29° 21′ S.: 14° 58′ E.), the day before dawn arrival at Capetown, two accompanied ship from 1700 to 1745 hrs. and a subadult

Black-browed Albatross scavenging on refuse thrown overboard did not dispute possession with these skuas.

Nearly three weeks later, on 9th July 1960, about 24 hours after sailing from Capetown, homeward bound, two skuas—possibly the same birds seen on 22nd June—observed from 1710 till dark (noon 29° 18′ S.: 13° 47′ E.).

"BROWN"? SHEARWATER. At 1230 on 11th May, a large unidentified shearwater seen momentarily near the stern.

A new species of *Cisticola*

by MELVIN A. TRAYLOR

Received 23rd January, 1967

While examining the *Cisticolas* in Field Museum of Natural History, three specimens were found in the series of *C. cinereola* that evidently did not belong to that form, and represented a new species. All were from the lower Tana River area, east of 40° E. and south of 1° S. Solicitation of other museums produced three more specimens from the Los Angeles County Museum, taken in the same area and also misidentified as *C. cinereola*. These six specimens, apparently all that are known of this new form, may be described as:

Cisticola restricta sp. nov.

Type: adult ♂ from Karawa, lower Tana River, Kenya, 2° 38′ S. 40° 12′ E. Collected 4 June 1932 by V. G. L. van Someren. Field Museum of Natural History number 200020.

Description: superficially most nearly resembles *C. cinereola* with which it has been confused in the past. Differs from *cinereola* as follows: (1) lacks the white bases to the nape feathers; (2) has a rusty wash to the feathers of the head top and nape, setting them off from the grey-brown back, while in *cinereola* the coloration of the upperparts is uniform; (3) has the dark streaking of the upperparts narrower; (4) has a grey wash on the sides of breast and flanks not found in *cinereola*; (5) has the tail proportionately longer than in the perennially plumaged populations of *cinereola* found in Kenya. In general, *restricta* is a pale, grey-brown, medium-sized *Cisticola*, finely and uniformly streaked on crown and upper back, the crown lightly washed with rusty; lower back and rump uniform grey-brown; tail grey-brown and of typical *Cisticola* pattern, the tips pale buff and the black spots bold, visible both above and below, but not quite reaching the edges of the feathers; edgings of wings faintly rusty, but not in marked contrast to upperparts; tenth (outermost) primary blade-shaped, about half the length of ninth; underparts a very pale buff, almost white, with a light grey wash on sides of breast and flanks. Sexual dimorphism in size appears moderate, wing length of the single female available being about 90% that of the males. There is no evident dimorphism in colour. A young male in first winter plumage has the crown much more reddish than adults.

Measurements of type: wing 61; tail 56; culmen 14+ (tip broken); tarsus 22 mm.

Range: the area around the lower Tana River from Sangole and Ijara to Karawa. Co-ordinates of the localities from which *restricta* has been taken are Ijara, 1° 34′ S., 40° 31′ E; Karawa, 2° 38′ S., 40° 12′ E; Mnazinia, 1° 59′ S., 40° 08′ E; and Sangole, 1° 30′ S., 40° 36′ E.

Remarks: the relationships of *restricta*, particularly in view of the lack of knowledge of its behaviour, can not be determined at this time. Despite its apparent similarity to *cinereola*, I do not believe that *restricta* is most closely related to that species. The most striking distinction is the lack in *restricta* of the white bases to the nape feathers, a character that is diagnostic of *cinereola* among the medium-sized *Cisticolas*. Also, the range of *cinereola* extends down the Tana to Bura (spec. Los Angeles Co. Museum), a locality within fifty miles of Ijara, and further collecting may well show that *cinereola* and *restricta* overlap. (see map).

The species which *restricta* most nearly resembles is *Cisticola lais* of which the race *distincta* is found in the Kenya highlands. Like *restricta*, *distincta* has the upperparts including the crown well streaked, with a rusty wash on crown and nape. In general appearance *restricta* is a pale, washed-out version of the richly coloured *distincta*. In size they are also alike, except that *distincta* has a longer, more robust tarsus. However, the habitat of *restricta* is all wrong. According to John Williams (*in litt.*) the lower Tana is "arid thorn bush country, mainly red sand with a belt of riverine acacia along the Tana." On the other hand, *distincta*, and all other races of *lais*, occur "mainly in the highlands on rocky hillsides and at the bases of cliffs where there are rocks, grass and scattered bush." In the genus *Cisticola*, where behaviour is notably constant and plays such an important part in classification, such diversity of habitat preference would be most unusual within a single species or even between two closely related species. Unless actual knowledge of *restricta* in life shows that it is similar in song and behaviour to *distincta*, I would question any close connection.

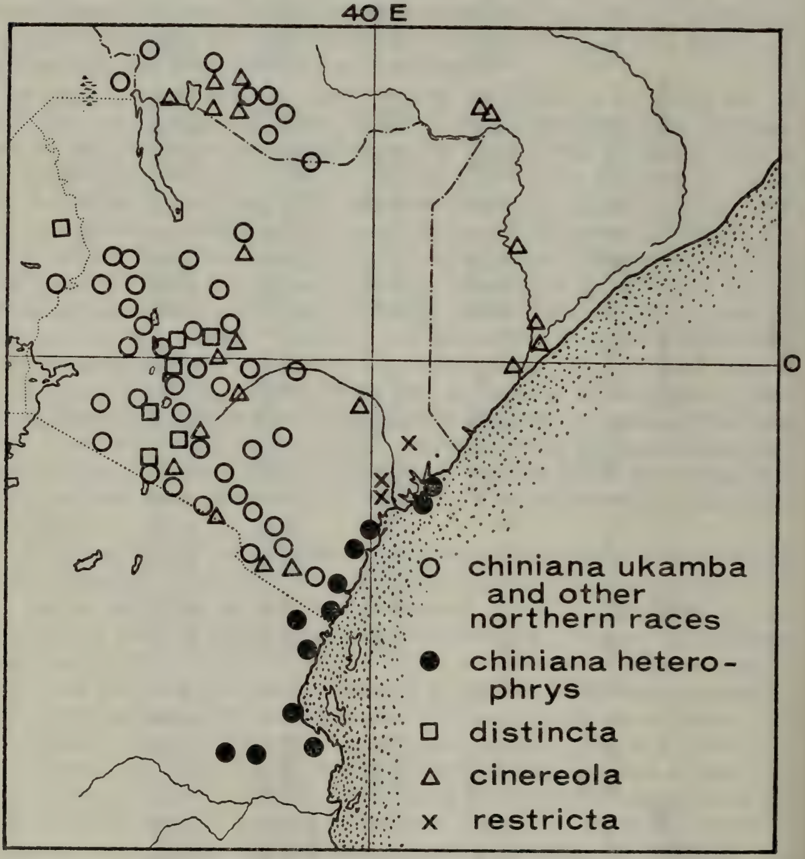
A third species to which *restricta* shows a superficial resemblance is *chiniana*. However, *restricta* differs in being smaller and with a proportionately longer tail, and in lacking the marked sexual dimorphism in size, female about 80% of male, that is characteristic of *chiniana*. In addition, *restricta* is sympatric with *heterophrys*, the coastal race of *chiniana* that is found from Lamu to Dar-es-Salaam and Kilosa. In coloration, *restricta* is easily distinguished from the plain coloured, sympatric *heterophrys*, but does resemble the streaked *ukamba* of arid interior Kenya. However, it differs from *ukamba* in having a streaked rather than mottled crown, and its dorsal streaking is narrower. Here again knowledge of *restricta* in life would be most helpful, because *chiniana* is one of the most distinctive of all *Cisticolas* in habits. The habitat at least is correct, for *chiniana*, like *restricta* and *cinereola*, is everywhere a bird of thorn bush and acacia.

Comparative measurements of the various species are given in the table. The four species form a surprisingly uniform group in wing size, but differ somewhat in proportions. *C. chiniana heterophrys* and *C. distincta* have proportionately larger tarsi and bills, but the differences between species are no greater than between the two subspecies of *chiniana*. *Distincta* and *restricta* have proportionately longer tails, but again this difference is no greater than between the winter and summer tails of the

		Wing			Tail			Culmen			Tarsus		Wing ♀/♂	tail/wing
restricta														
♂♂	(4)	61–66	(63.0)	(4)	56–58	(56.8)	(3)	15, 15, 15	(15.0)	(4)	22–23	(22.3)	%89	%83
♀♀	(1)		56	(1)		53	(1)		15	(1)		21		89
cinereola														
♂♂	(11)	60–65	(63.1)	(9)	49–54	(52.3)	(10)	13.5–15.5	(15.0)	(11)	21–24	(22.8)	86	90
♀♀	(2)	54, 54	(54)	(1)		48	(2)	13, 14	(13.5)	(2)	21,21.5	(21.3)		95
chiniana ukamba														
♂♂	(11)	63–70	(66.2)	(9)	53–60	(56.1)	(11)	15–16	(15.5)	(11)	22–25	(23.7)	87	85
♀♀	(2)	57, 58	(57.5)	(2)	49, 52	(50.5)	(2)	13.5, 14	(13.8)	(2)	21, 22.5	(21.8)	(82 *fide* Lynes)	88
chiniana heterophrys														
♂♂	(13)	62–68	(64.0)	(11)	50–56	(52.8)	(12)	15–17.5	(16.3)	(13)	23–25	(24.0)	79	83
♀♀	(5)	49–53	(50.8)	(5)	40–43	(42.0)	(5)	13–14.5	(14.0)	(5)	21–22	(21.2)		83
distincta														
♂♂	(4)	59–64	(62.0)	(4)	55–60	(58.5)	(4)	15–17	(15.9)	(4)	23.5–25	(24.1)	93	94
♀♀	(5)	56–59	(57.6)	(5)	51–55	(53.0)	(5)	14.5–16	(15.2)	(5)	22.5–23	(22.8)		92

annually plumaged Abyssinian populations of *cinereola*. The great sexual dimorphism in size in *chiniana* is evident in the figures for *heterophrys* and also for *ukamba* when Lynes' figures, based on many more specimens, are used. Again, *restricta* and *distincta* agree in showing the least dimorphism.

Summarizing what can be learned from museum specimens *restricta* appears most nearly related to *distincta*. However, the marked difference in habitat, arid sandy thorn bush versus rocky, grassy hillsides, is too great to unite them in the same species at this time. The final disposition of *restricta* must await its study in the field.



Map of East Africa showing the distribution of the new species *Cisticola restricta* and its possible relatives *chiniana*, *distincta* and *cinereola*. The Tanzania range of *chiniana* races other than *heterophrys* is omitted.

I would like to thank Herbert Friedmann of the Los Angeles County Museum and George Lowery of Louisiana State University Museum of Zoology for the loan of valuable comparative material, and Pat Hall of the British Museum for many valuable suggestions.

Apparent zoogeographical dispersal patterns in two avian families

by C. J. O. Harrison

Received 17th January, 1967

INTRODUCTION

Darlington (1957), after studying the zoogeography of the various vertebrate classes, presented a hypothesis for a general pattern of vertebrate evolution and dispersal. This assumed that there had been a common area of origin and evolution of successive dominant groups in the main part of the Old World tropics (Ethiopian and Oriental) and a spread into smaller and less favourable areas, with successive replacement of earlier groups by more recent groups of species which, by their plasticity and vigour, would tend to be dominant. Owing to the restrictions imposed by the configuration of land-surface this spread would tend to be channelled along three routes, one southwards into southern Africa and Madagascar, another south-east through the East Indies into Australasia and the Pacific, and a third via Eurasia into North America and thence to South America. As each group radiated from the centre of origin, it would tend to replace earlier groups, so that, although some overlap would occur, the earliest groups would tend to persist only at the extremities of the routes of dispersal, while the more recent groups would be most apparent at the centre of origin. Such a pattern would, of course, be modified by subsidiary factors affecting dispersal.

Darlington experienced difficulty in attempting to trace the evidence of evolution and dispersal underlying the present pattern of bird distribution, and commented that "the dispersal of dominant birds has probably often been so rapid and also so complex as to be beyond analysis." He considered however that the present distribution was the result of the movement of birds over something like the existing land pattern, being relatively recent in terms of geological history.

Some of the examples which Darlington mentioned suggested that a dispersal of the type which he described had taken place. In the Caprimulgiformes he found a pattern of threefold radiation—an early one which left small isolate families in Central America, Australia, and the Oriental Region, then the radiation of the family Caprimulgidae and that of the genus *Caprimulgus*. The fact that the last two resulted in a cosmopolitan distribution prevented him from drawing any conclusions regarding the centre of origin. He also listed examples of discontinuous distribution with apparently closely related species or genera occurring on different continents, citing *Spizaetus* (Accipitridae) found from eastern Asia to New Guinea, and again in tropical America; *Dendrocygna viduata* (Anatinae) in Africa and South America; *Porphyrula* (Rallidae) in Africa and Central and South America; *Ciccaba* (Strigidae) in Africa and Central America; the two similar genera *Lophostrix* and *Jubula* (Strigidae), one in Central America and one in Africa; and *Picumnus* (Picidae) in the Oriental region and South America. These latter examples do not however offer evidence of the type of dispersal envisaged unless one can show that their present distribution is related to the presence of later replacement groups.

In recent studies of certain avian families, involving the examination of data on plumage, morphology and behaviour, in order to clarify relationships of various species, it was found that there were taxa within the families which appeared to show evidence of the type of dispersal and replacement suggested by Darlington for other vertebrates. It seemed possible that a failure to find more widespread evidence of this pattern in avian distribution might be due to an expectation that this type of dispersal and replacement would be apparent at familial level, whereas it in fact appears to be more evident in lower taxa.

In a study of this kind some attempt must be made to separate evidence of major dispersive movements and the affinities of the species involved from the multitude of minor factors which will tend to modify the main trends. Such conclusions as are made will necessarily have a highly subjective basis and due allowance must be made for this. Ultimately the accuracy of the observations probably depends on the extent to which the species relationships within the families can be deduced and interpreted.

In the present study, evidence which was thought to indicate this dispersal pattern was found in the typical doves, subfamily Columbinae of the Columbidae, and in the waxbills, Estrildidae.

In this paper the following zoogeographical regions are recognised; Ethiopian, extending into Arabia; Oriental, from India to Celebes, Sula, and Lesser Sundas, and including the Philippines, Pacific islands to the east of them; Australasia, including New Guinea, Moluccas, and New Zealand, and islands south and east of the Moluccas; Palaearctic, the region between the Mediterranean and India being a part of this and also a link between the Ethiopian and Oriental regions; Central America, including areas immediately north and south of the Caribbean, and the Caribbean islands; North America, and South America. Where the distribution of any taxon extends into more than one such region the regions are hyphenated; *e.g.* Oriental-Australasian.

THE PATTERN OF DISPERSAL

From a consideration of the groups studied it was found possible to construct an ideal pattern of this type of dispersal as it would appear in lower avian taxa. The pattern is due (in part) to the fact that species tend to become more divergently specialised according to the length of their period of existence, and that taxonomic arrangements are influenced by such specialised differentiation.

The oldest group of species would show an interrupted distribution towards the ends of the routes of dispersal (*i.e.* in some or all of the following regions—South Africa and Madagascar, South America, Australasia). They would tend to show extremes of adaptation and to occur as well-marked species with a tendency to limited and possibly discontinuous distribution. The differences which had evolved between species would result in their taxonomic arrangement in small and often monotypic genera, or in some cases separation into different higher taxonomic categories. In areas where competition with later dominant groups, or other species with similar ecological requirements, did not occur, considerable adaptive radiation would be likely to have taken place.

The middle group or groups of species would tend to have a wider and more continuous distribution, but would be likely to be absent from extreme or isolated areas. Genera would be relatively few and the entire group might be regarded as a single genus. Species would tend to be stable and well defined, and speciation would be likely to have occurred to an extent where, in different areas, similar species would have evolved which replaced one another geographically. Adaptive radiation would be less apparent and the species would be more likely to resemble one another. They would probably tend to be relatively less specialised in their needs, but nevertheless adapted for definite ecological niches.

The recent groups of species would tend to have a more limited distribution near the centre of origin, with a few species showing greater dispersal. Speciation would tend to be less well-defined, and it might be difficult to be certain of specific and subspecific separation. Major extensions of range, and hybridisation where sympatry occurred, would be likely. Species would tend to lack very specialised ecological requirements and to be more likely to adapt themselves to environmental changes.

The division into three major categories here is largely a matter of convenience of concept, the number of successive groups being likely to vary from one family to another.

THE APPARENT EVIDENCE OF DISPERSAL

1. COLUMBINAE.

Within this subfamily three main subdivisions can be recognised—a large bronzewing group, a medium-sized *Columba* group and a small *Streptopelia* group. The pattern of taxonomic arrangement in these groups can be summarised as follows:—

Bronzewings.

Oriental-Australasian regions.	1 genus of 2 species.
Australasian region.	3 genera of 1 species, 5 genera of 2 species, 1 genus of 3 species, 1 genus of 18 species on islands.
Ethiopian region.	2 genera of 1 species, 1 genus of 4 species.
Americas.	4 genera of 1 species, 3 genera of 2 species, 1 genus each of 3, 4, and 5 species, 1 genus of 15 species and 3 of 1 species on and around Caribbean islands.

Columba.

Nearly cosmopolitan. 1 genus of 52 species, divided into four subgenera with 1 species, 3 species, 4 species and 44 species. The last subgenus has been divided into 5 species groups, comprising 15 subgroups.

Streptopelia.

Ethiopian-Oriental-Palaearctic regions. 1 genus of 15 species.

(a) *Bronzewings.*

The earliest of the above groups would appear to be the bronzewings. This term has been used here is reference to a group of species centred around those having iridescent patches or spots on the wing-coverts. When a study was made of certain plumage characters of pigeons it was concluded (Harrison 1960) that there was evidence of a large bronzewing group of species in the Columbinae. This group had been recognised by Salvadori (1893) who treated them as a family, the Peristeridae, but they were not separated by Peters (1937). The tendency within the group is for a loss of the distinctive markings, and the iridescence on the wing-coverts is most extensive in the single species, *Chalcophaps indica*, occurring in the Oriental region. In the Australasian region it has given rise to a second sibling species. In addition to the iridescent wing colouring *Chalcophaps* also shows the chestnut colour on the primaries and the pale head pattern that appear to be recurring characters within this group.

In Australia apart from the four fruit pigeons of the genus *Ptilinopus*, and *Columba norfolcensis*, all other species are considered to belong to this group. They comprise the following genera—*Petrophassa* (2 species), *Phaps* (2 species), *Ocyphaps* (1 species), *Lophophaps* (2 species), *Geophaps* (2 species), *Histriophaps* (1 species), *Geopelia* (3 species), and *Leucosarcia* (1 species). Outside Australia *Geopelia striata* is found through the East Indies to Malaya, and another genus *Henicophaps* (2 species) occurs in New Guinea.

These species show the type of extreme differentiation which results in a taxonomic arrangement with numerous small or monotypic genera. There is considerable size variation and some morphological variation with a marked tendency towards adaptation for terrestrialism. Iridescence on the wing-coverts is most marked in *Phaps*, and is present in ten Australian species, but within the group it shows a tendency to disappear and *Petrophassa* shows only a tiny concealed patch on one feather, while in *Leucosarcia* and *Geopelia* it is absent. The *Geopelia* species show a barred plumage pattern which is apparent in some degree in other genera such as *Geophaps* and *Lophophaps* and is apparent otherwise in the juvenile plumage. Varying degrees of chestnut colouring are present on the inner web of primary feathers, this being another character which appears to show a gradual loss. In one species of *Petrophassa* and some races of *Geopelia striata* this area of the flight feathers lacks pigment and the chestnut areas are replaced by white. Several species show the development of crests by elongation of the feathers of the crown.

The eighteen species of the ground dove, genus *Gallicolumba*, which occur over a wide area of Australasia and the Pacific share morphological and plumage similarities with the bronzewings and are here considered to have radiated from the bronzewing group. The large number of species is due to speciation within an island distribution. Both these and the Australian species appear to fill the niche occupied elsewhere by medium-sized gamebirds. In view of the extreme divergence and specialisation shown by various genera in this area, it seems possible that the Oriental-Pacific genus *Macropygia* may also form a part of the bronzewing group. Species in the latter genus have long tails and in some cases barred plumage.

The subfamily Gourinae should also be mentioned here. It consists of the now extinct monotypic *Microgoura* with a specialised bill and crest, and three *Goura* species. All occur in the New Guinea area. The *Goura* species are huge birds with flat lacy crests and purple patches on the blue-grey wings and they are ground doves. The purple area on the wing-coverts might be homologous with the iridescence apparent in bronzewing species, and the crest could be foreshadowed in some of the crested Australian species. The extreme divergence shown by these species suggests that they may be relicts of an earlier dispersal but in many respects they appear to be more closely linked with the bronzewings than with other doves.

The African bronzewings comprise only five species, all of them relatively small birds. They are ground-feeders, but do not show marked specialisation for this. This apparent lack of adaptive radiation might be due to competition with successive dove groups and with the medium-sized ground-feeding gamebirds which are present in numbers in Africa. The African genera are *Turtur* (4 species), *Tympanistria* (1 species), *Oena* (1 species). Most occupy arid or semi-arid country. *Turtur brehmeri*, a larger and more brightly coloured species of forest areas, was regarded at one time as a member of a monotypic genus *Chalcopelia. Oena capensis* is tiny, long-tailed and tends to be nomadic. All these species have either small iridescent spots on some wing-feathers, or black markings replacing these, and all show chestnut colouring on the inner webs of the primaries.

In Central and South America the situation is again more complex. There is an assemblage of species of small ground doves most of which show iridescent, or more frequently black, patches or spots on the wing-coverts. Peters (1937) recognised seven genera—*Claravis* (3 species), *Columbina* (1 species), *Uropelia* (1 species), *Scardafella* (2 species), *Metriopelia* (4 species), *Oxypelia* (1 species), *Columbigallina* (5 species). This arrangement was further subdivided by Hellmayr and Conover (1942) to produce ten genera, but subsequently this has been reduced by Goodwin (1959a) to five. It illustrates a similar taxonomic pattern to that which occurs in the Australian doves, many genera being recognised, each containing only a few species. Black and iridescent wing markings occur in all but four species, and two of the remaining species of *Scardafella* show a convergent resemblance to an Australian species, *Geopelia striata*, in plumage pattern, shape and size. Only five species show chestnut pigment on the webs of the flight feathers. As in the Australian and African species there appears to be a tendency for a loss of the common signal patterns: these species show some degree of adaptation. Species of the genus *Metriopelia* appear to be adapted for an existence at high altitudes and one species has become a hole-nester.

As in the Australasian and Pacific areas, so also in the South and Central American areas there are genera of larger doves which may have been derived from the ancestral forms of this group. *Zenaida* (Goodwin 1958), which comprises *Zenaidura* (2 species), *Zenaida* (2 species), and *Nesopelia* (1 species) of Peters (1937) is a group of larger doves with a distribution extending into North America. These species show dark spots on the wing-coverts, and in *Nesopelia galapagoensis* there is a heavily-spotted pattern comparable with that of the smaller American bronzewing species. The extinct *Ectopistes migratorius* appears to have had a close affinity with these species, and the whole group may represent adaptive radiation from the bronzewing stock.

In addition to these there is a group of quail-doves in Central America which Peters (1937) considered were close to *Gallicolumba*. Goodwin (1958) has pointed out that this may be convergent resemblance and that this group appears to be closely related to *Zenaida*. The group comprises *Osculatia* (1 species), *Oreopelia* (15 species), *Geotrygon* (1 species) and *Starnoenas* (1 species). Goodwin (1958) has combined most of these in the genus *Geotrygon*, retaining *Starnoenas* as a related species sufficiently distinct to justify a possible monotypic genus. The large number of species in the genus *Oreopelia* of Peters (*op. cit.*) may be compared with that of *Gallicolumba* in the Pacific with its 18 species. In both groups distribution over a large number of islands has resulted in speciation and in both cases ground doves of convergent form and plumage have been produced.

(b) *Columba.*

The group of species which appears to have replaced the bronzewings over a wide central area is that which is taxonomically regarded as a single genus *Columba*. This arrangement in a single unit is an indication of the relative similarity to one another shown by these species. The genus has a wide and continuous distribution over Africa, Asia, and the Palaearctic, extending from Japan southwards into the Pacific and East Indies with one species just reaching Australia. In addition there is another group occupying South and Central America and the southern part of North America. The genus is not wholly uniform and indivisable. Goodwin (1959b), in a review of its taxonomy, recognised four subgenera. Three of these are minor groups probably representing either divergence in isolation or the relict forms of a minor dispersal wave—*Nesoenas* (1 species) of Mauritius, *Turturoena* (3 species) of Ethiopia and *Oenoenas* (4 species) of Central and South America. Within the remaining subgenus Goodwin recognised five species groups, and within these fifteen subgroups, mostly comprising from three to five species, although a few were represented by a single species.

These doves are, for the most part, medium-sized to large birds which do not show extreme differences of structure and habit. They exhibit some adaptation to particular habitats, and have produced tree-dwelling and rock-dwelling forms, and forms which replace each other altitudinally. In most cases specific distinctions are clearly defined. Goodwin considered that within the genus the greatest amount of adaptive radiation had occurred in the Palaearctic and Ethiopian regions. The American species require special consideration. They are absent from much of North America and do not show any obvious evidence of a Eurasian link in their distribution. This discontinuity might, however, be due to changes in general distribution due to Pleistocene glaciation, the effects of which extended considerably further south in North America than was the case in Eurasia. The present species may subsequently have arisen by divergence and speciation within the Central and South American regions. Studies such as those of Cumley and Irwin (1944) and Johnston (1962) which show that these species are more closely related to each other than to any Eurasian species would appear to confirm such an origin but would not justify claims that this group was independent of the *Columba* complex unless it could be shown that they were in fact more closely linked with some other dove genus, or that the discontinuity was as great as those separating other groups from *Columba*.

(c) *Streptopelia.*

The relatively small genus *Streptopelia* comprising fifteen species, appears to show the type of distribution and other characters suggested for a recent species group. The distribution is an Ethiopian-Oriental one with a pair of sibling species, *S. turtur* and *S. orientalis* extending as migrants over the Palaearctic region. These latter species show differences that would be regarded as of subspecific importance only, were it not that their ranges overlap and they show ecological separation where they meet. Another two species, *S. chinensis* and *S. bitorquata* extend into the East Indies.

This genus has fewer species but these tend to have wide distributions. Of the patterned-back *turtur* types, two migrate northwards into Europe and Siberia, while a third, *S. lugens*, occupies North Africa except for the Sahara. Of the patterned-neck species one, *S. senegalensis*, extends over all Africa and through Arabia to India while the other, *S. chinensis*, extends from India and China into western East Indies. The remaining ten species form a plain-back, ring-neck group with *S. torquata* in the East Indies, *S. tranquebarica* in India and China, *S. decaocto* from Asia Minor to China, *S. picturata* in Madagascar and islands off East Africa, and the remaining six species form a group in Africa, closely resembling one another and many of them sympatric in distribution.

In addition to the close resemblance of *S. turtur* and *S. orientalis*, the two species *S. decaocto* and *S. roseogrisea* form another pair which are taxonomically difficult to separate. Plumage differences are in any case slight in these birds, but although there are distinct differences of voice the two appear to hybridise if they meet. Hybridisation within the whole genus appears to occur with relative ease and frequency under captive conditions. Although there is some size difference, especially where more than one species is present in an area, the species are, as a whole, uniform in appearance and behaviour and do not appear to show any extreme of variation and adaptation.

The most striking feature of this group is its apparent relative adaptability, especially to conditions created by man. There is one form that has been domesticated for so long that its origin has been in doubt. It appears to have been in existence since the period of the Roman Empire. This is the so-called Barbary Dove, at one time given the specific name of *S. risoria*. It has been linked by some authorities with *S. decaocto*, but the variant plumage is not a useful character and the voice is that of *S. roseogrisea*. Peters (1937), when stating the distribution of *S chinensis*, refers to introduction into Mauritius, Hawaii, Celebes, Moluccas, and islands in the Flores Sea. *S. picturata* is said to have been introduced into

Mauritius, Reunion, and the Seychelles, although Peters (*op. cit.*) seems to imply that this may have been part of a natural extension of distribution. *S. chinensis* has also been introduced and established itself successfully, though usually in areas modified by man, in Australia, New Zealand, and parts of California. *S. senegalensis* has also established itself in Australia. The most striking change in distribution has, however, been shown by *S. decaocto*. Apparently without help from man, though always in conjunction with human settlement and partly dependent on human activity, this species has spread in a relatively short time to colonise Europe. It is suggested that the genus is one which, compared with the bronzewing and *Columba* groups, is still relatively plastic and is actively adapting itself to its environment.

(d) *Other dove groups.*

The other major group outside the Columbinae, the fruit pigeons (Treroninae of Peters) has not been studied here, but according to D. Goodwin (pers. comm.) it appears to show evidence of the evolution of two successive major groups; a *Ptilinopus-Ducula* group showing more extreme adaptation and variation and with a wide distribution through the Oriental-Australasian-Pacific regions, with an isolated group on and around Madagascar; and a *Treron* group with an Ethiopian-Oriental distribution. The latter group is more uniform in appearance with fewer species recognised, but many subspecies.

GENERAL COMMENTS (Columbinae)

It must be assumed that when later evolutionary groups arise it is probable that they have been derived from some part of an earlier group within the same area. Presumably both *Columba* and *Streptopelia* would have a bronzewing ancestral form. Since *Streptopelia* will have had less time to diverge from this than will *Columba*, this might account for the apparent affinity, revealed in Sibley's (1960) study of egg-white protein, between the former genus and some of the genera considered here to belong to the bronzewings. The position of *Aplopelia* is of interest in this respect. This African species has a discontinuous montane and island distribution suggesting a relatively early origin and the sum of its characters place it somewhere between the *Turtur* bronzewings and *Streptopelia*. It has been suggested that it is a *Streptopelia* adapted for a *Turtur* niche. The present study suggests that this would be atypical for *Streptopelia* as a whole and that *Aplopelia* might represent an early offshoot from the same stock that gave rise to the later *Streptopelia* or represent a direct linking form.

In the comments on *Streptopelia* it has been implied that adaptation to co-existence with man may represent the environmental adaptation of a ''recent'' species. It is, however, recognised that other species from older groups have increased their range under similar circumstances. *Geopelia striata* has been successfully introduced into Madagascar and other islands off East Africa, St. Helena and Hawaii, and possibly its presence in Celebes and Amboina may be due to introduction (Peters 1937). Similarly *Columba livia* has been carried into every part of the world by man.

(*to be continued*)

CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

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Other correspondence should be addressed to the Hon. Secretary, Mr. Martin W. Woodcock, 34 Hill Road, Theydon Bois, Essex.

DINNERS AND MEETINGS FOR 1967

21st March, 18th April, 19th September, 17th October, 21st November, 19th December.

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The six hundred and forty-second meeting of the Club was held at the Rembrandt Hotel, London, on the 21st March, 1967.

Chairman: Mr. R. S. R. Fitter

Members present 26; Guests 10.

Mr. Peter Conder, Director of the Royal Society for the Protection of Birds, gave an illustrated talk of which he has kindly supplied this summary.

The Coto Doñana to-day

The meeting was reminded that the state of the Coto Doñana is part of the great estuary of the Guadalquivir situated on the coast between Huelva and Cadiz. It is one of the most important wetland areas of Europe. The World Wildlife Fund had raised a large sum of money to which the Spanish Government had added an even larger sum for the purchase of 15,000 acres of Marismas, Cork Oaks, Stone Pine, *Halimium* scrub, fresh water lagoons and sand dunes. The Fund had also purchased part of the Palacio which is to be used as an administrative and research headquarters of the reserve, as well as providing accommodation for visiting scientists.

The main problems for the future were the necessity for an overall management plan for this area. Two questions were posed; was this great area to be purely for scientific research and collecting of specimens or was it to be a representative sample of the marsh and dune area of the Guadalquivir delta and be treated as such? If the latter then a conservation programme to provide for the regeneration of the Cork Oaks, for the control of the large number of visitors expected, for the provision of water-holes or lagoons near the Palacio among other projects were urgently needed.

In addition money was badly needed to buy two more areas of the Marismas which were of a type rather poorly represented in the reserve at present. The World Wildlife Fund needs money for this project.

A new race of *Cisticola galactotes*

by Melvin A. Traylor

Received 14th January, 1967

During the preparation of the African Sylviinae for a forthcoming volume of Peters' Checklist, it became evident that the populations of *Cisticola galactotes* inhabiting Gabon differ too much from typical *amphilecta* in which they are usually placed, and that they require a new name. I therefore propose:

Cisticola galactotes grisea subsp. nov.

Type: Field Museum of Natural History no. 210411, adult male from Ombue, Fernan Vaz, Gabon, collected 8 April 1951 by H. A. Beatty. Collector's number 352.

Diagnosis: upperparts much more grey than in the adjoining race *amphilecta*, the pale edgings of the back feathers without any buff or brown wash. Crown with a pale rusty forehead grading into greyish on the nape, instead of uniform bright rust. Wing patch, formed by the outer webs of the primary and secondary coverts and of the remiges, reddish straw instead of bright rusty as in *amphilecta*. Underparts almost white, lacking the buffy wash of *amphilecta*, and with grey on flanks and sides of breast. Has a perennial mode of dress as in the equatorial populations of *amphilecta*.

Measurements of type: wing 66, tail 52, culmen from base 17, tarsus 25 mm.

Range: from Gabon, at Omboue, Mouila and the Ogowe River, to the Loango Coast and Brazzaville.

Remarks: the range of typical *grisea* is confined to Gabon, even the specimens from Loango showing some brightening of the crown and wing patch. The single specimen available from Brazzaville is typically *grisea*, but a single male from Kinshasha, on the left bank of the Congo at Stanley Pool, is typical *amphilecta*. Birds from Gamboma and Coquilhatville on the middle Congo are intermediate, while those from Impfondo on the Ubangi, not far above its confluence with the Congo, are *amphilecta*. The range of *grisea*, therefore, is virtually surrounded by that of *amphilecta*, yet the five specimens available from Gabon are uniform in colour and quite distinct. *Grisea* is distinguished from other grey-crowned races such as *zalingei* and *suahelica* by the dull coloured wings.

I would like to thank Pat Hall of the British Museum, and Dean Amadon and Stuart Keith of the American Museum of Natural History for the loan of critical comparative material.

A case of dimorphic juvenal plumage

by Melvin A. Traylor

Received 26th January, 1967

The African warbler *Calamonastes simplex* is a sombrely coloured species, with greys, browns and dull white predominating in its plumage. The nominate race is dark brown throughout, paler on the under parts and with pale barring on the throat and midline of breast and belly. The remaining races, *undosus*, *katangae*, *cinerea* and *huilae*, are grey to grey-brown above and whitish below, with sometimes a grey wash on the breast and a variable amount of fine dusky barring on throat, breast or upper belly. In *simplex*, *undosus* and *katangae* the juvenal plumages are almost identical with those of the respective adults, the only difference being that in *undosus* and *katangae* there is sometimes a yellow wash on the belly, a typical warbler character. In *cinerea* and possibly in *huilae*, however, two distinct types of juvenal plumage are found.

In 1891 Reichenow described *Camaroptera congica*, based on the unique type from Leopoldville. This specimen was dull greyish-green, paler on the under parts and with a greyish wash on breast and flanks. *Congica* was treated variously as a distinct species or as a race of *Camaroptera brachyura*, but Chapin (1953, *Birds Belgian Congo*, 3: 323) stated that he had examined the type and believed it to be a juvenal of *Calamonastes simplex cinerea*. More recently, Mrs. B. P. Hall wrote me that there was a juvenal female from Missao de Luz, Angola, in the British Museum collection that she believed was also a juvenal of *cinerea* and possibly the same as *congica*. Through the kindness of Mrs. Hall and of Prof. Stresemann and Dr. Mauersberger of the Zoologisches Museum in Berlin, I have been able to borrow and compare the Angola and Leopoldville specimens.

The Missao de Luz bird is similar in every way to the type of *congica*, except that it has a buffy-yellow wash over the grey-green, and has some shadowy barring on the throat. In every way it appears like an adult *cinerea*, lightly washed with buffy-olive. While the type of *congica* lacks the barring on the throat, two or three fresh feathers on the throat are whitish, rather than olive, showing that the next plumage would probably lack all green or olive. Both specimens are, without doubt, juvenals of *cinerea*, despite the striking difference between them and the juvenals of other races of *simplex*.

This difference between the juvenals of two races of the same species is interesting in itself, but even more noteworthy is the fact that within *cinerea* there are two types of juvenals. A juvenal male of *huilae* (distinguished from *cinerea* only on size) in Field Museum is practically indistinguishable from adults and shows no trace of yellow or green. More to the point, a juvenal female of *cinerea* from Chisengue, Angola, in the British Museum, is, according to Mrs. Hall, ''so normal that without Lynes' description of the skull and evidence of the soft pale gape it is hard to tell from the adult''. The juvenals of *cinerea* are quite clearly dimorphic, with a normal phase similar to the other races, and a unique greenish or buffy-olive phase.

While many species of birds are dimorphic in the adults, and this dimorphism may be reflected in the juvenals, I am not aware of any other passerine species in which the young are dimorphic but not the adults, although this is true of the downy young of Ross's Goose, *Anser rossi*. This applies both to sexual dimorphism and to that not related to sex. In the case of *Calamonastes*, the dimorphism is not related to sex. Both the greenish phase bird from Missao de Luz and the normal phase bird from Chisengue are females, while the type of *congica* and the normal juvenal from Huila are males.

Chapin (*l. c.*) implicitly considered the green phase juvenals of *cinerea* to be primitive, linking *Calamonastes* to *Camaroptera*, and he submerged the former genus in the latter. However, the green phase birds may be an extreme expression of the yellow-bellied juvenals that occur in the races *undosus* and *katangae.* White- and yellow-bellied juvenals occur in both these races, a condition not uncommon in many warblers but usually considered individual variation rather than dimorphism. In *katangae*, however, there may actually be dimorphism. Irwin (*in litt.*) had six juvenals of *katangae* from Zambia. Of these, five were white-bellied and one yellow-bellied, nor have any been recorded that could be considered intermediate. If the juvenals of *katangae* are actually dimorphic, then the origin of the strikingly different phases in *cinerea* is more easily explained.

On the plumage (including a partial albino), moults and breeding season of *Lamprotornis australis* (Smith)

by R. K. Brooke

Received 28th January, 1967

I have already shown (Brooke 1967) that the related Southern Long-tailed Starling *Lamprotornis mevesii* (Wahlberg) has a complete pre-nuptial moult and an incomplete post-nuptial moult unlike the majority of passerines. I have since had the opportunity of examining a series of 29 specimens of Burchell's Starling *L. australis* (Smith) in the National Museum, Bulawayo. This is not an adequate series for a full scale moult study although it is probably the largest single collection of this starling in the world. The evidence is not conclusive, but it appears that this species also completes most of its moult immediately before breeding. Benson and Pitman (1966) mention four breeding records, apparently all that are known, one is referable to November at the beginning of the rainy season and the other three are referable to March, near the end of the rainy season. There is no evidence that they breed at any other time of the year and it seems unlikely that all four records should be totally out of the species' natural season. One may assume therefore, that Burchell's Starling is a rainy season breeder.

Moult is first seen in specimens collected in early September. The breast, throat, mantle and back moult first and subsequently the wing and tail feathers. The moult in the primaries is a descending one and in the secondaries it is an ascending one with an occasional individual feather not moulted. In the tail the central pair of rectrices moult first. The last two pairs to moult are the second outermost followed by the third outermost which is the final pair to moult. The growth of the outer primaries which are the last feathers to grow is delayed due to the onset of breeding. Consequently the total period of the pre-nuptial moult is September to March but most of the moult takes place between September and December, the remaining period being devoted to moulting the outermost primaries. The slow-down is presumably due to the increased energy requirements of the reproductive period.

There is no evidence of a post-nuptial moult.

It is probable that immature birds start moulting a little before adults. They may be told from adults by the lesser amount of iridescence on the abdomen and the dull green rather than blue-green breast. This latter characteristic may sometimes be produced in adult birds by very marked wearing of the breast feathers. It also appears that immature birds complete their moult by December and that the birds collected by Traylor (1965) in fresh plumage in December were immature birds who had just completed their post-juvenile moult and were about to breed for the first time. The overall similarity to *L. mevesii* as described in Brooke (1967) is considerable.

A female Burchell's Starling shot on 2 May 1958 forty-one miles north-west of Molepolele in Botswana in fairly fresh plumage shows some symmetrical albinism: there is a single white feather at the back end of the black cheek patch; there are several minute white feathers below and behind the eye; there is one white feather on the side of the nape and two in the upper wing-coverts. The tenth (outermost) primary of the right wing is white whereas that on the left is normal.

I am obliged to the Curator, National Museum, Bulawayo, and to Mr. M. P. Stuart Irwin, Ornithologist there, for facilities for study and to the latter for criticizing a draft of this paper.

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On the type locality of *Campethera a. abingoni* (Smith)

by C. M. N. WHITE

Received 10th January, 1967

In *Bull. B.O.C.* 1965, 85, p. 64 Mr. Clancey considers that the type locality of *Campethera abingoni abingoni* (Smith) has been incorrectly accepted by ornithologists as Natal, and should be shifted to the western Transvaal with consequent changes of name of two forms of this woodpecker. Such changes of names which have been in use for decades are to be deplored and are, I believe, not warranted.

Clancey argues that the words after the description "occurs in the same localities with the last" must be construed as meaning Kurrichaine, *i.e.* Zeerust, western Transvaal because that was the locality given for the preceding species. In my view the words are ambiguous and need not have a geographical connotation at all. They could equally describe types of environment or could merely denote the fact that the two species of woodpecker occur sympatrically. Consequently I consider that Port Natal, the locality quoted in the footnote "specimens of this species were obtained near Port Natal" is the correct type locality.

Even if "the same localities with the last" is construed in a geographical sense, and considered on line priority to have precedence over the footnote, both localities occur on the same page and there is nothing to prevent the latter and only categorical locality being taken as the restricted type locality. The first reviser principle can be applied in this as it has in many other similar cases. If doubt still exists the International Commission on Zoological Nomenclature should be requested to rule that Port Natal is the correct type locality in accordance with the principle of conservation.

Taxonomic notes on some African buntings, weavers and waxbills

by C. M. N. White

Received 19th February, 1967

These notes deal primarily with material recently examined in the Cape Town Museum and the National Museum, Bulawayo to both of which I take the opportunity to express my thanks for facilities enjoyed. I have added references to a few other points so that these notes will also serve as an addendum to my *Check List* (1963) of the families concerned.

1 *Emberiza tahapisi nivenorum.*
Fringillaria tahapisi nivenorum Winterbottom, 1964, Cimbebasia, No. 9, p. 73. Otjivasandu. Paler and more yellowish-rufous than the nominate, especially below. This appears a valid form. Kaokoveld, South West Africa.

2 *Ploceus bicolor albidigularis* Ripley & Heinrich, 1966, Postilla, No. 95, p. 26. Calulo, Cuanza Sul, Angola appears to me to be a synonym of *amaurocephalus* which appears normally to have grey fringes to the throat.

3 *Ploceus ocularis tenuirostris* Traylor, 1964, Bull. B.O.C. 84, p. 83. Sepopa, Ngamiland. This form supposedly differs from *crocatus* in its more slender bill. The difference in measurements is less than one millimetre and more material is needed to show whether it is worth while recognising a separate form in northern Ngamiland north to the Chobe mouth.

4 *Ploceus olivaceiceps vicarius* Clancey & Lawson, 1966, Durban Mus. Nov. 8, p. 36. Panda, Sul do Save, Mozambique. Male differs from the nominate in having a paler yellow head top which extends down mid-mantle and the rump is dark lemon. An example examined bears out the characters of this apparently isolated population of the species.

5 *Pseudonigrita arnaudi iringae* Ripley & Heinrich, 1966, Postilla, No. 96, p. 43. 15 miles north east of Iringa. It is unfortunate that this form is only known from the type locality, in Tanzania. Its characters indicate that is somewhat intermediate between the two very distinct forms *arnaudi* and *dorsalis*, being small like the latter but with the black tail of the former; the back darker than the nominate with dusky edges to the feathers of the mantle, and the crown ashy, not whitish. It appears to be a valid form.

6 *Passer iagoensis* (Gould).
The earliest name for this species is *Passer motitensis* with reference *Pyrgita motitensis* Smith, 1836, Rep. Exped. Explor. C. Africa, p. 50, Kuruman.

7 *Passer iagoensis subsolanus* Clancey, 1964, Durban Mus. Nov. 7, p. 138. Syringa, Matabeleland. Material examined does not support the separation of this form from *motitensis* (Smith).

8 *Petronia superciliaris rufitergum* Clancey, 1964, Durban Mus. Nov. 7, p. 136. Kabompo, Zambia. Birds from Zambia are rather darker and warmer than those from south of the Zambezi. The clinal variation was commented on by White and Moreau in 1958, *Bull. B.O.C.* 78, p. 162, where reasons for not subdividing the species were given.

9 *Pytilia melba clanceyi* Wolters, 1963, J. Orn., p. 186. Wau, southern Sudan, appears to be based upon a population intermediate between *citerior* Strickland and *soudanensis* (Sharpe). The extent to which separate status should be given to intergrading populations in this species is a matter of opinion.

10 *Estrilda erythronotos soligena* Clancey, 1964, Durban Mus. Nov. 7, p. 139. Otjimassu, South West Africa. Good series examined does not support the validity of this form.

11 *Lagonosticta rufopicta* (Fraser)

In 1963 in the *Check List* I treated *plumbaria* Clancey, from Ngamiland as a synonym of *nitidula*. I have now examined the material in the National Museum, Bulawayo. Birds from Ngamiland north to the southern Barotse province in Zambia are slightly greyer and less brown above than *nitidula* (Hartlaub), slightly paler below and lacking any fawn wash on the abdomen. It is recognisable though not strongly differentiated.

12 *Spermestes cucullatus tessellatus* Clancey, 1964, Occas. Pap. nat. Mus. S. Rhod. 4 (27 B), p. 28. Natal. I cannot separate this form from *scutatus* (Heuglin).

A recently described African Swift

by C. M. N. White

Received 8th November, 1965

Friedmann in *Contributions to Science*, no. 83, December 8th, 1964 has described *Apus pallidus kapnodes* as a new subspecies from Mt. Maroto, Uganda. It is said to resemble *somalicus* (Clarke) but to be darker and slightly larger. In fact it is evident that Friedmann has redescribed *Apus niansae* (Reichenow). The diagnosis and measurements quoted make this quite clear. When Friedmann states that *niansae* examined by him are larger than *kapnodes* with wing over 170 mm. it is apparent that these are *Apus barbatus roehli* Reichenow, and were misidentified as *niansae* which in turn led to the naming of *kapnodes*. I am grateful to Dr. Friedmann for lending a specimen of *A. p. kapnodes* to the British Museum (Nat. Hist.) and to Mrs. B. P. Hall for examining it and confirming these conclusions.

Apparent zoogeographical dispersal patterns in two avian families

by C. J. O. Harrison

(*continued from page 56*)

2. ESTRILDIDAE

This family has undergone several different taxonomic rearrangements and reappraisals during recent years. Delacour (1943), Wolters (1957) and Steiner (1960) have all proposed new arrangements. Delacour lumped species together to form fewer and larger genera, while the others tended to restore earlier subdivisions. The fact that the species within this family are relatively easy to keep in captivity, coupled with a lack of useful morphological characters for subdivision within the family of relatively similar species has led to a study of their comparative ethology, behavioural characters being used in the study of taxonomic relationship. Morris (1958) studied Asiatic and Australian species, Immelmann (1962) also studied the Australian species; while some of the African species have also been examined (Harrison 1962a, Harrison and Dormer 1962). Certain plumage patterns within the family have also been used in considering the phylogenetic relationships (Harrison, 1963a). Delacour (*op. cit.*) recognised three major divisions or tribes within the family—the waxbills, Estrildinae; the grassfinches, Erythrurae and the mannikins, Amadinae. In this form or with the now recognised suffix for tribal divisions—Estrildini, Erythrini, and Amadinini—these have been used by other authors. In the present paper these divisions are used with slight modifications and referred to in the vernacular. Since, in this paper the genus *Erythrura* has been transferred to the mannikin tribe, the Amadinini, the grassfinches will require a new tribal name.

The pattern of taxonomic arrangement within these groups can be summarised as follows:

Waxbills and grassfinches:	
Australasian region	5 genera with 1 species, 1 genus with 3 species.
Ethiopian region	3 genera with 1 species, 1 genus with 2 species. 4 genera with 3 species, 3 genera with 4 species, 1 genus with 6 species and 1 genus with 12 species.
Early mannikins:	
Australasian region	5 genera with 1 species, 1 genus with 2 species, 1 genus with 3 species.
Oriental–Australasian	1 genus with 10 species (on islands).
Oriental–Ethiopian	1 genus with 3 species.
Ethiopian region	2 genera with 2 species.
Recent mannikins:	
Australasian–Oriental–Ethiopian regions.	1 genus with 15 species.
Oriental–Australasian region.	1 genus with 13 species.

(a) *Waxbills and grassfinches*

These two groups both show the characters here considered typical of an evolutionarily early group. Some factor, possibly Pleistocene glaciation, has prevented them from invading the Americas, and they occur as two discrete groups, the grassfinches in Australasia and the waxbills in Africa. Delacour (1943) considered the genus *Amandava* with two Asian species and *Aegintha temporalis* of Australia to be waxbills; but the former is here considered to be a mannikin group (Harrison 1962b) and the latter a grassfinch (Cayley 1932, Wolters 1957, Immelmann 1962, Harrison 1963b).

The grassfinches consist of eight species which, like the bronzewing doves of Australia, have differentiated sufficiently to be arranged in small or monotypic genera. They comprise the following genera—*Zonaeginthus* (3 species), *Emblema* (1 species), *Oreostruthus* (1 species), *Neochmia* (1 species), *Bathilda* (1 species), *Aegintha* (1 species). The group as a whole, in its radiation, has produced forms which show a striking resemblance to some African waxbills both in plumage pattern and colour, and in some cases in the general pattern of behaviour characters. *Aegintha temporalis* shows such a close resemblance to species of the African genus *Estrilda* that it is difficult to find characters which justify separation (Harrison

1962a, 1963b). *Neochmia phaeton* closely resembles species of the African genus *Lagonosticta* (Mitchell 1962, Harrison 1963b). *Emblema picta* has a generalised but less obvious resemblance to *Hypargos niveoguttatus*; while *Zonaeginthus bellus* and *Z. oculatus* have a similar, less well-defined resemblance to species of the genus *Estrilda*. It is considered that this resemblance in various species is due to convergence, resulting from parallel evolution, under similar environmental pressures, of species having a common basic relationship. While considerable differences of plumage pattern have evolved there is little morphological difference, the species being small, seed-eaters with slight differences in bill-shape and tail-length. Their distribution is mainly Australian, one race of *Neochmia phaeton* and the single species of *Oreostruthus* being found in New Guinea. The waxbill group in Africa is larger. Some of the genera, *e.g. Estrilda* and *Lagonosticta*, show the tendency also apparent in other taxa, for a group of similar, closely-related species to have evolved in Africa corresponding to single species or pairs of species elsewhere. This is probably related to the ecological history of the areas concerned. Owing to the existence of a number of allopatric forms with differences of coloration, the precise relationships of which are in doubt, there is some element of guesswork in calculating the number of species present, and the totals quoted are provisional rather than exact. The genera concerned are: *Estrilda* (12 species), *Lagonosticta* (6 species), *Uraeginthus* (4 species), *Pytilia* (3 species), *Spermophaga* (3 species), *Clytospiza* (3 species), *Hypargos* (1 species), *Mandingoa* (1 species), *Cryptospiza* (4 species), *Pirenestes* (3 species), *Nigrita* (4 species), *Parmoptila* (1 species), *Nesocharis* (2 species). Of the above, one species is sometimes separated from *Estrilda* in the monotypic genus *Coccopygia*, and *Uraeginthus* may be regarded as two genera, *Uraeginthus* and *Granatina*, with two species each.

The overall picture is again one of a large number of small genera. These show a greater degree of morphological divergence and adaptation than do the grassfinches. *Pirenestes* and *Spermophaga* are genera of relatively large species with large heavy bills. This is especially true of *Spermophaga*, where the bill is almost as large as the rest of the skull. *Parmoptila* is an aberrant species with a small thin insectivorous type of bill, and looks more like a flowerpecker of some sort and quite unlike a waxbill. *Estrilda* and *Lagonosticta* species are very small, the former genus being adapted for life in open grassland, the latter for life in low cover, while *E. caerulescens*, like *Nesocharis* and *Nigrita*, is specialised for a semi-arboreal existence. As in the grassfinches, plumage patterns are bright, conspicuous and very varied. Some genera are very local in distribution, but *Estrilda* and *Lagonosticta* are distributed over Africa and one species of *Estrilda* is found in Arabia.

(b) *Mannikins*

The remaining group is that of the mannikins. This has a very wide distribution across Africa, Asia, and down into Australasia and the Pacific Islands. Morris (1958) recognised the way in which the mannikins bridged the geographical gap between the grassfinches and the waxbills. He considered Africa to be the probable point of origin and postulated either a mannikin invasion via Asia to Australia, giving rise to waxbills at its point of origin and grassfinches at its ultimate limit, or else a combined mannikin and waxbill invasion from Africa, via Asia, to Australia. While the mannikins are an obvious replacement group and show some of the characters of an evolutionarily recent group, they also show some anomalies. Mainly towards the peripheral area of their geographical range are a number of small genera or single species, considered to belong to this group, which show a degree of differentiation comparable with that of the waxbill/grassfinch group, and which show discontinuous distribution of a relict type in some cases. In view of this it is suggested that there have probably been at least two evolutionary waves within the mannikins, and while the precise limits of these groups may be in doubt and while the differences might alternatively be due to a series of undetectable minor movements, it is proposed to group them here into two categories: one showing the greater degree of divergence and specialisation—the earlier mannikins; and one showing greater uniformity—the recent mannikins.

(b1) *Earlier mannikins*

Within this group are a number of Australian species. These consist of the following genera—*Poephila* (3 species), *Heteromunia* (1 species), *Taeniopygia* (1 species), *Stizoptera* (1 species), *Aidemosyne* (1 species), *Chloebia* (1 species). They show some adaptation of size and shape. *Heteromunia* is specialised for a terrestrial existence and is generally considered to be related to *Lonchura castaneothorax*, although morphologically it could equally well be regarded as a specialised derivative of *Poephila*. *Taeniopygia* and *Stizoptera* are small, and both these and *Aidemosyne* have tended to develop patches of bright colour and conspicuous contrasting plumage patterns. *Chloebia* has plumage of a vivid green, yellow and purple colour, most like those of *Erythrura*. Mitchell (1958) has studied the affinities of *Chloebia gouldiae* and suggested that it might be congeneric with the latter genus.

There are ten species of *Erythrura* with a distribution extending from Malaya, through the East Indies to Australia, New Guinea and some of the Pacific Islands. The number of species appears to be the result of speciation in isolation on islands. The birds are mainly green with patches of blue, red and black on the heads and tails of many species. They are adapted for forest life, and although Delacour (1943) suggested that this was "... an ancient, rather primitive genus, adapted for life among bamboos" this latter habitat appears peculiar to the most westerly species. The genus *Padda* (2 species) of Java and some of the Lesser Sunda Islands is a borderline species, but in view of its marked differentiation from most other mannikins it may well be a member of this earlier group. It shows a different, bolder coloration, and the principal species is a large bird with a large, bright pink bill; but the more localised island species shows a darker and less differentiated coloration. In Africa the genus *Amadina* (2 species) is one of this early mannikin group of genera. The species show specialised behaviour and displays and have a conspicuous and elaborate plumage pattern, in addition to which the male of one species has red on the head while the other shows a red band across the throat.

Amandava shows a scattered distribution. It consists of three species which show some evidence of relationship in their behaviour and plumage, but the differences between them have been sufficient for Wolters (1957) to give them separate subgeneric rank, while Steiner (1960) made them separate genera. *A. amandava* is found from India through Burma to Indochina, and again in Java and the Lesser Sundas. *A. formosa* is confined to central India, while *A. subflava* is found in eastern and southern Africa. These species show bright colours. The male of *A. amandava* is red, the male of *A. subflava* is red and yellow on the underside, and both sexes of *A. formosa* are green and yellow. The African genus *Ortygospiza* comprises three species of small birds specialised for a terrestrial existence in open grassland, and in some ways a parallel to *Heteromunia* in Australia. Most authorities consider that there are affinities between this genus and *Amandava*, but its special adaptations make it difficult to be certain of its relationships. It is here placed with the mannikins, but it might be a modified waxbill.

Lepidopyga nana of Madagascar is a small species with brown plumage and a black throat and straw-coloured tail-coverts. It was put in *Lonchura* by Delacour (1943) and Morris (1959). In view of its limited distribution in an area where relict forms normally occur, it is possible that it might be a relict of an earlier mannikin invasion which, probably through lack of competing forms, failed to evolve very striking differentiation in appearance and plumage.

(b2) *Recent mannikins*

Although there is some measure of disagreement regarding the number of genera involved, as might be expected in an apparently more recent group, these are here regarded as two genera. The first, *Lonchura* (15 species), occurs from Africa, through Asia and just into Australasia. The species involved are mostly dull brown in colour, sometimes streaked and with limited scaly or speckled patterning in some. This assemblage has at times been divided into four genera, two of them monotypic, largely because of a disinclination on the part of some taxonomists to group together species from different continents in the same genus. There is a group of eight species which comprised *Lonchura* in its narrower sense and which might now be treated as a subgenus. This consists of five species, three of them with distinct subspecies which replace one another geographically over an area from Asia to the Moluccas, together with a specialised offshoot in Borneo and another forming a pair of species or subspecies (Mees 1958) in New Guinea. This appears to be another example of divergent speciation on islands. Sympatric with much of this group is the species *L. punctulata*, with a wide distribution and several subspecies. In Africa there is a group of three species showing evidence of common ancestry and usually separated in the genus *Spermestes* on very slender grounds (Harrison 1964). It consists of a large species, a medium sized species with an eastern and a western form, and a small species; all of them widely sympatric and distributed over most of Africa south of the Sahara.

The remaining three species are sometimes referred to the genus *Euodice*. The two species *cantans* and *malabarica* are considered to be members of the genus *Lonchura* (Harrison 1964). They appear to have a relatively recent common ancestry and together extend from India to South Africa, but their distribution is interrupted by the Arabian desert and they appear to have diverged to species level. *E. griseicapilla*, sometimes placed in the monotypic genus *Odontospiza*, has been recently studied by Steiner (*in* Langburg 1963) who considered it a member of *Lonchura*. It has a restricted distribution in East Africa.

The other group of recent mannikins is here regarded as a separate genus *Munia*. These are characteristically rather squat birds, with heavy bills and short tails. The legs and toes are rather long and appear to be adapted for grasping vertical grasses. Their plumage usually shows large areas of uniform brown, black, or white, in bold contrast, and the upper tail-coverts vary from chestnut-red to straw-yellow. Many of the variations are subspecific and on purely morphological grounds it is difficult to determine where the specific limits are and sympatry appears to be almost the only criterion for species determination. On the latter evidence it is possible to recognise two similar groups, both occupying roughly the region from Asia, through the East Indies to New Guinea; one based on *M. ferruginosa*, the other on *M. maja*. In addition there is in the New Guinea region a complex group centred around *M. castaneothorax*, about ten species in all, with a distribution extending from the Lesser Sundas to New Ireland and into Australia. Some species of this latter group appear to be very closely related to *M. ferruginosa* and provide a point where the two merge, while in Australia a race of *M. castaneothorax* hybridises freely with *M. flaviprymna* which is considered to be a form of *M. maja*. The number of species in the New Guinea region appear to be the result of the morphology of that region which tends to result in rapid speciation and subspeciation in a number of different families. In the Estrildidae the adaptive radiation has occurred to produce montane and lowland forms on New Guinea, and island isolates which appear to have reached specific status. The only morphological trends are slight differences in size and a tendency towards a heavier bill in montane forms. It would appear that in this genus as a whole speciation is occurring as a result of isolation in a mainly island habitat, but this does not appear to have reached the stage where marked specific identity has evolved.

GENERAL COMMENTS (Estrildidae)

The Estrildidae do not separate into such obvious groups as do the Columbinae. This may, however, be due, if the suggested evidence is accepted, to a shorter period between the evolution of one group and another, and possibly this is also linked with the type of variation produced by evolution over a mainly island area. The range of forms within the mannikins is such that one might prefer to suggest for this group a series of smaller movements rather than one or two major dispersive trends.

There would appear to be some parallel to the Columbidae in the degree of adaptation to co-existence with man shown by some of the species. In the Estrildidae it would appear to be less voluntary since many are kept as cage birds. Individuals of a race of one species, *Lonchura striata* (*acuticauda*), has been bred in captivity in China and Japan for several centuries and has become domesticated to a point where it will breed freely in small cages and permit considerable interference with its nesting. It is widely known to aviculturalists as a fosterer for the eggs and young of other small seed-eaters. It is usually known as the Bengalese

Finch and is popularly believed, without evidence, to be of hybrid origin (Eisner 1957). *Padda oryzivora* has also been domesticated to a lesser degree, a white variety being widely bred in cages.

One other species in this family has been extensively bred in captivity in recent years, and virtually domesticated. This is an Australian *Taeniopygia castanotis*, the Zebra Finch. There seems to be evidence of a more definite pre-adaptation to cage conditions here. Both this species and *Melopsittacus undulatus*, the equally successful Budgerigar, are desert species adapted to dry conditions and a dry seed diet for both adults and young, and to breeding whenever rain occurs. The extreme success of both these species as cage-birds appears to suggest that the conditions under which birds are usually kept resembles at best semi-desert conditions.

DISCUSSION

In view of the constantly recurring pattern which is apparent not only in the taxa discussed here but also in others which have been given only a superficial scrutiny, it seems reasonable to accept this as another example of the pattern which Darlington found more clearly demonstrated in other vertebrate classes. The idea of repeated and overlapping waves of dispersal would seem to account for the type of distribution pattern which we now find in birds. While this does not rule out the possibility that such an apparent pattern might be the accidental result of other factors governing the dispersal and evolution of birds, the fact that it also occurs in other zoological classes where the evidence for dispersal of this type is stronger does suggest that the present hypothesis is the most likely explanation.

It might be argued that birds, by their mobility, have established different dispersal patterns from those of other organisms. There is, however, considerable evidence in avian distribution indicating that the type of dispersal shown is relatively slow in spite of this mobility and that birds appear to be subject to similar limitations to those experienced by more terrestrial organisms. What is remarkable is not the mobility of birds, but their apparent failure to colonise new areas consistently and to occupy all available niches. The evidence of extreme mobility in certain taxa or species which contrast with more sedentary trends in related species becomes explicable in the light of this hypothesis.

If this hypothesis is correct, then it would appear that at recurrent periods in the evolutionary history of most major taxa new groups must emerge. These can only arise from already existing species or groups of species. One must therefore assume that at some period, an increase in numbers together with a strong tendency to spread, and evidence of greater adaptability, becomes apparent within an existing species or taxon. Subsequent to such dispersive trends there would appear to be a tendency towards more sendentary behaviour by the now widely distributed birds, during which differentiation and speciation could occur. It seems likely also that during the earlier stages of this occurrence the tendency to disperse might prevail to such an extent that the birds could cross areas which at other periods would form an effective barrier to their spread. This type of dispersive behaviour can be seen on a small scale during periods when various subarctic species irrupt southwards. The recent explosive spread of the Cattle Egret, *Bubulcus ibis*, might be an example of such behaviour, while the expansion of range in Europe of the Collared Dove, *Streptopelia decaocto*, is another obvious potential example. Both of these changes have been attributed to an extension of suitable habitat, but it is difficult to find evidence that such habitat was not also available at other times, nor does this explain why similar species in similar circumstances fail to show such trends. The explanation of this sudden dispersive behaviour in certain species might lie in a recurrent phenomenon of the type suggested.

The point most difficult to explain is why such evolution and dispersal appears to have occurred in one major area rather than another. This might be due to the existence, in the Ethiopian-Asiatic land complex, of the largest land-mass lying across the Equator and most likely to form a point of origin for subsequent spread. A more limited evolution and dispersal has in fact occurred in the similarly situated parts of South and Central America. Difficulty arises in trying to determine the probable area of origin of a particular taxa owing to a tendency for some workers to do so by a numerical count of species, the suggested point of origin being that where the greatest number of species is found at the present time. This is unsatisfactory since it does not allow for secondary adaptive radiation in the absence of competition. While a species count might be satisfactory in the case of obviously recent groups it seems more likely to occur towards the terminal parts of dispersal routes where competition might be absent, rather than at the centre of origin.

This more dynamic concept of avian evolution, with continual spread and replacement, would appear to provide a far more useful explanation of avian distribution as we find it at present than does a concept of an early and parallel evolution of most groups followed by minor adaptations to local ecological changes, providing faster or slower evolution at various times in groups which otherwise show a steady co-existence with one another.

It has been suggested here that there is some relationship between the fact that species which are well adapted to co-existence in close contact with Man are also species which belong to evolutionarily recent groups as defined in this paper. It is difficult to assess the degree to which pre-adaptation plays a part in this. The species which show most effective adaptation to life in human communities are *Passer domesticus*, *P. montanus* and *Sturnus vulgaris*. The genus *Passer* in the Ploceidae contains a number of rather similar species with a limited distribution from Africa across to eastern Asia. They are relatively unspecialised and appear to have the characters of a recent group, including a tendency toward inter-specific hybridisation. *P. domesticus* in the west and *P. montanus* in the east have adapted themselves to what might almost be described as commensalism with man and, as a result of this, have been widely dispersed around the world, where they rapidly colonise new areas. The genus *Sturnus* has three species with ranges extending into the Palaearctic but is otherwise found from North Africa to eastern Asia (*nigricollis* and *melanopterus* are here regarded as members of the genus *Acridotheres* [Harrison 1963c]). Compared with the Sturnidae as a whole *Sturnus* shows a recent type of distribution. *S. vulgaris* has, in addition to its ability to exploit the man-made environment, shown considerable ability to colonise new areas once the initial introduction has occurred. All three species are of recent origin and the evidence does appear to suggest that the species which adapt themselves to man-made conditions are evolutionarily recent and do not show the more specialised and limited ecological requirements of earlier ones. It may be suspected that such birds are still adapting themselves to their environment and that the ability to co-exist with man might be evidence of the adaptability of species with less rigid requirements, rather than purely a matter of pre-adaptation.

SUMMARY

A hypothesis of zoogeographical dispersal in vertebrate classes was proposed by Darlington. This assumed that there had been a common area of origin of successive dominant groups in the Old World tropics, spreading into less favourable areas, with earlier groups being successively replaced by later dominant groups. It was suggested that the distribution of birds had been too rapid and complex to provide evidence of a dispersal of this type. In the present study some avian families appeared to show evidence of this type of dispersal in taxa below the family level.

Since species tend to become more divergently specialised according to the length of their period of existence, and since this influences taxonomic arrangement, an ideal pattern of such a dispersal could be constructed. Older groups of species would have a discontinuous distribution towards the ends of routes of dispersal, and the degree of divergence would be indicated by small and often monotypic genera. In the absence of competition considerable adaptive radiation might occur. Middle groups would have a more continuous distribution with fewer genera and stable species. There would be less evidence of divergent specialisation. Recent groups would have a limited distribution, poorly defined speciation and greater plasticity of adaptation.

Evidence was found in two taxa. In the Columbinae three groups were apparent. There was a bronzewing group in Australasia, Africa, and America, with small genera and extreme differentiation; a middle group, the genus *Columba*, with a wide distribution and many species and a relative lack of specific differentiation and a recent *Streptopelia* group with fewer and less well-defined species and greater evidence of recent spread and adaptation.

In the Estrildidae a small group of grassfinches of mainly monotypic genera occurs in Australasia and a waxbill group with many small genera in Africa. These birds show parallel evolution, strong convergence in some species and marked specific differentiation, suggesting that they may be relics of a single earlier dispersal. The remaining mannikin group spread through the Oriental region, Africa and Australasia, appear to be a replacement group, and can be divided into two. The earlier mannikins form many small genera with marked differentiation and a peripheral distribution, resembling in some respects the waxbill-grassfinch group. The recent mannikins consist of two large genera of rather similar species, widely distributed from Africa to Australasia.

From the evidence of these families there would appear to be a pattern of spread and replacement by subsidiary groups, of a type comparable with that suggested by Darlington. In their dispersal birds appear to be subject

to limitations similar to those affecting other vertebrate groups. If the hypothesis is correct, then there would appear to be a new dispersive and adaptive tendency at certain periods in older taxa, giving rise to new ones. During such a rejuvenescence a tendency to disperse might result in species crossing areas which at other periods might form effective barriers. It is suggested that adaptation to life in close relationship with man, such as is shown by some species, might be evidence of plasticity of adaptation in species of recent origin rather than evidence of pre-adaptation.

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A partially albino *Turdus fuscater* from Ecuador

by JOHN WILLIAM HARDY

Received 19th December, 1966

In a group of 32 specimens of the Great Thrush, *Turdus fuscater*, Lafresnaye and d'Orbigny, in the Moore Laboratory of Zoology, Occidental College, Los Angeles, California, there is an interesting partial albino. It is a female, collected by Teodomiro Mena at Quinche Vana Cotopaxi, Ecuador, in the cordillera oriental, on 14th March 1932. It bears Moore Laboratory number 7326. The distribution of white feathers on this specimen is as follows: there is a circumorbital patch from three to five mm. wide, with scattered white feathers continuing on to the chin, forehead, nape, and sides of neck; a few white feathers and white-tipped feathers are on the back, flanks, and rump; the breast has several white feathers on the right side near the bend of the wing; one right scapular is completely white, as is each 9th primary; the outermost right rectrix is completely white. The tail is lacking two rectrices, including the presumed outermost left one, which, due to the bilateral distribution of white on the face and 9th primaries, one might suppose was also white.

BRITISH ORNIT

INCOME AND EXPENDITURE ACCOUNT F

1964	EXPENDITURE	£	s.	d.	£	s.	d.
	Bulletin Vol. 86—						
	Cost of Publication, Distribution, etc.	645	3	10			
432	*Less* Sales	165	14	9	479	9	1
45	Notices, etc, for meetings				40	17	9
5	Audit Fee				5	5	0
5	Contribution *Zoological Record*				5	5	0
8	Expenses of Guest Speakers				7	2	6
18	Club Guests				8	5	3
10	Projectionist				16	5	6
34	Miscellaneous Expenditure and Postage				35	2	7
—	Loan Interest (Gross)				50	0	0
£557					£647	12	8
60	Excess of Expenditure over Income brought down				120	8	6
805	Expenses of property "Clovelly", less rent received				—	—	—
—	Transfer to General Fund				148	10	6
£865					£268	19	0

BALANCE SHE

		£	s.	d.	£	s.	d.
	GENERAL FUND:						
	As at 31st December, 1965	549	13	11			
	Add Premium on redemption of Defence Bonds	48	19	0			
550	Transfer from Income and Expenditure Account	148	10	6	747	3	5
	BULLETIN FUND:						
6	Donations from Members				6	1	0
87	SUBSCRIPTIONS 1967 paid in Advance				134	2	11
73	CREDITORS				86	17	6
750	LOAN FROM MISS C. M. ACLAND				—	—	—
£1,466					£974	4	10
	TRUST FUND: (The Capital of this Fund may not be used. The Income from it is General Revenue.)						
1,000	F. J. F. Barrington Legacy				1,000	0	0
£2,466					£1,974	4	10

R. S. R. FITTER, *Chairman*
P. TATE, *Hon. Treasurer*

We have examined the above Balance Sheet and Income and Expen
be in accordance therewith.

FINSBURY CIRCUS HOUSE,
BLOMFIELD STREET, LONDON, E.C.2.
21st February, 1967

)GISTS' CLUB

EAR ENDED 31st DECEMBER, 1966

1965	INCOME	£	s.	d.	£	s.	d.
	SUBSCRIPTIONS:						
331	Members	362	3	9			
2	Associates	2	2	0	364	5	9
57	Income Tax recovered under Deeds of Covenant 1965/66				55	2	3
	INVESTMENT & DEPOSIT INCOME:						
	General Fund	58	16	6			
107	Trust Fund	48	19	8	107	16	2
497					527	4	2
60	Balance, excess of Expenditure over Income carried down				120	8	6
£557					£647	12	8

		£	s.	d.
2	Sales of *Scientific Index*		9	0
52	Sales of *Bulletin* for previous years less expenses	95	16	0
—	Rent less Expenses—Property "Clovelly"	172	14	0
811	Transfer from General Fund	—	—	—
£865		£268	19	0

CEMBER, 1966

		£	s.	d.	£	s.	d.
	ENERAL FUND, INVESTMENTS:						
',000	£1,000 4½% Defence Bonds, at cost	—	—	—			
100	3% Savings Bonds 1960/70, at cost	100	0	0			
',100		100	0	0			
20	*Less* Reserve	20	0	0	80	0	0
	(Market Value 1966: £87)						
,080	(Market Value 1965: £1,085)						
1	PROJECTOR, LANTERN & SCREEN—Nominal Value				1	0	0
1	STOCK OF *Bulletin*—Nominal Value				1	0	0
	No value has been included for the stock of the *Scientific Index*						
26	SUNDRY DEBTOR				—	—	—
358	CASH AT BANK AND ON DEPOSIT				892	4	10
.466					974	4	10
	TRUST FUND, INVESTMENT:						
.000	£1,399 11*s.* 0*d.* 3½% War Stock				1,000	0	0
	(Market Value 1966: £728)						
	(Market Value 1965: £748)						
,466					£1,974	4	10

with the books and records of the club and Certify then to

W. B. KEEN & Co.,
Chartered Accountants.

British Ornithologists' Club

REPORT OF THE COMMITTEE

FINANCE

The year 1966 was rather more satisfactory for the Club in a financial sense, but the improvement was almost entirely due to the income from the property at Tring, and much increased sales of back numbers of the *Bulletin.* Regarding the latter, the Committee would like to express its thanks to Mr. N. J. P. Wadley for his great efforts in this field.

Although Members' subscriptions showed an increase of £30 on 1965, this was largely due to overdue subscriptions for 1965 being paid in 1966. We would like to draw the attention of Members to the great amount of work caused by those who are very late in paying their dues, and those who still pay at the old rate of 21*s.* which means endless reminders to collect the odd 9*s.*

The cost of printing the *Bulletin* rose by £20 which was less than expected. We were able to transfer £148 10*s.* 6*d.* to the general fund, and it must now be our aim to replace the investments which we had to sell in order to put the property at Tring into reasonable order.

Once again the Committee would like to express its thanks to Miss C. M. Acland, without whose generosity in making a loan to the Club, until we could realise some investments, we would not have been able to accept the property which is now making a considerable contribution to the financial well-being of the Club.

CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

Proofs must be returned without delay. No changes may be made at this stage, other than corrections. At the discretion of the Editor, the Club will pay for a reasonable number of monochrome blocks, which the contributor may retain for his own use.

Contributors are entitled to a maximum of thirty free copies of the *Bulletin*, supplied only as specifically requested by authors. Those contributing to a meeting should hand in their MS. at that meeting; otherwise a note will be inserted mentioning the contribution.

BACK NUMBERS OF THE *BULLETIN*

Applications for back numbers which cost 5*s*. each, should be made to N. J. P. Wadley, 95 Whitelands House, London, S.W.3. Members who have back numbers of the *Bulletin*, which they no longer require are requested to send them to Mr. Wadley.

SUBSCRIPTION TO *BULLETIN*

The *Bulletin* may be purchased by non-members annually for 40*s*. (payable in advance) or per copy 5*s*., payable to the Hon. Treasurer, P. Tate, 4 Broad Street Place, London, E.C.2

CORRESPONDENCE

Other correspondence should be addressed to the Hon. Secretary, Mr. Martin W. Woodcock, 34 Hill Road, Theydon Bois, Essex.

DINNERS AND MEETINGS FOR 1967

18th April, 19th September, 17th October, 21st November, 19th December.

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Edited by
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1967

BULLETIN

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Number 5

Published: 8th May 1967

The Annual General Meeting of the British Ornithologists' Club was held at the Rembrandt Hotel, London, at 6.30 p.m. on Tuesday, 18th April, 1967 with Mr. R. S. R. Fitter in the Chair.

The Minutes of the last Annual General Meeting were read, approved and signed.

The Accounts for the year 1966 were discussed. The Hon. Treasurer pointed out that during the year part of the Club's General Fund had been utilized to repay the £250 loan made to the Club by Miss Acland, and he was sure that all Club members would join him in expressing their gratitude at Miss Acland's generosity in enabling the Club to proceed without delay with the renovation of the property at Tring.

The Hon. Treasurer drew the meeting's attention to repairs which would require to be done on the fence of the Tring property which would cost £18 to £20 Mr. J. J. Yealland suggested planting a hedge, but this was not considered practicable.

The Hon. Treasurer also drew attention to the fact that the Club's projection screen was irreparably broken, but that the Committee would be able to replace it with a new, similar screen at the substantial discount to the ordinary price of around £15.

The adoption of the Accounts was proposed by C. J. O. Harrison, seconded by Capt. Barlow and agreed.

The Chairman proposed that Mr. P. Tate, Hon. Treasurer and Mr. M. W. Woodcock, Hon. Secretary should be re-elected for a further year. The motion was seconded by Dr. J. F. Monk and agreed.

The Chairman then pointed out that owing to two Committee members having been elected in 1964, it would be necessary to retire two members at this meeting, the senior names for retirement being Mr. P. Hogg and Sir Hugh Elliott, and a similar position would arise next year when Mr. M. L. R. Romer and Mr. C. J. O. Harrison were due to retire. Messrs. J. H. Elgood and D. Calder had been suggested as new Committee members to fill the vacancies arising, and, having been approached, they had agreed to stand for election.

These nominations were proposed to the meeting by Dr. J. F. Monk, seconded by Sir Landsborough Thomson and agreed, Mr. Calder to be regarded as the senior member for purposes of retirement.

The Hon. Treasurer proposed a vote of thanks to the Auditors and their re-election for the ensuing year. The motion was seconded by Mr. C. J. O. Harrison and agreed.

There being no further business, the meeting closed at 7 p.m.

The six hundred and forty-third meeting of the Club was then held.

Chairman: Mr. R. S. R. Fitter

Members present: 18; Guests 3.

''Birds as Men and Men as Birds'' was the title of a talk, with recorded accompaniment, given by Mr. Jeffery Boswall.

A hybrid House Sparrow x Tree Sparrow

by ANDRZEJ L. RUPRECHT

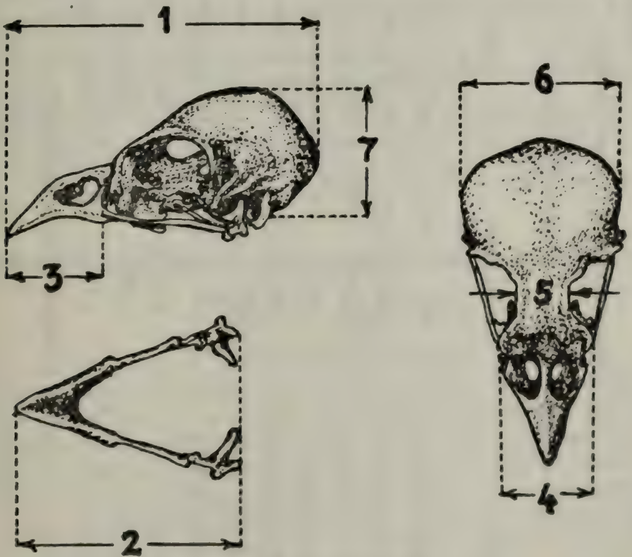
Received 7th January, 1967

In the wild, hybridisation among different species of sparrows is rare, but hybrids between different subspecies of sparrow are comparatively frequent. Seitz (1964) carried out observations in the south Tirol on the occurrence of natural hybridisation between the House Sparrow *Passer domesticus domesticus* (L.) and the Italian Sparrow *Passer domesticus italiae* (Vieillot) and found varying numbers of hybrids in different localities. Golovanova & Popov (1962) recorded the occurrence of hybridisation between *Passer domesticus griseogularis* Sharpe and *Passer hispaniolensis transcaspicus* Tschusi in natural habitats in the U.S.S.R.; they described a hybrid specimen and also observed a pair in which the male was *P. hispaniolensis* and the female *P. domesticus*. Meise (1934) described an interspecific hybrid from Zwickau, Germany, which showed the characteristics of both House and Tree Sparrows, and similar specimens have been described from Great Britain by Richardson (1957) and Rooke (1957). The observations on captive sparrows, made by Hampe in 1937 and 1938 and published by Meise (1951), prove beyond doubt that hybrids can be produced between different sparrow species.

A sparrow which showed some characteristics of both the House and the Tree Sparrow was shot in Bialowieza (52° 42′ N., 23° 50′ E.), Poland, on 13th December, 1965. It was a male (sex determined by dissection) which occurred among a flock of House Sparrows. Because of its mixed characteristics, I found this bird difficult to identify and asked three other people to identify it by using the key of Dunajewski & Marchlewski (1938)—all identified it as a Tree Sparrow. The bill was horn black, as in the Tree Sparrow in winter (in the male House Sparrow, the bill is yellowish in winter—Sokolowski, 1958). Of the characteristics of the House Sparrow, the specimen had only a white spot near the eye and an insignificant intermixture of brown-grey feathers on the crown, which was basically rust-brown in colour. Of the characteristics of the Tree Sparrow, it had two white wing bars, blackish ear-coverts and also a brown area under the wings whereas this area is greyish-white in the House Sparrow.

The great similarity of the Bialowieza hybrid to the specimens from Zwickau, Germany, and Dorset, England, must be stressed. Meise (1934) stated that the hybrid differed from the House Sparrow by the reddish-brown colour of the head with a narrow border of grey-brown on the feathers, and the whitish band on the side of the neck; in addition, the ear-coverts and the brownish tint under the wings were not so clear as in the Tree Sparrow. Such coloration of the crown does not occur in either parent species, but only in the hybrid. Meise (*l.c.*) explains the origin of this intermediate coloration of the crown on the grounds that the genes from neither parent that control crown colour can exert full effect in the hybrid.

Since I have not met any discussion of the skull among the previous descriptions of sparrow hybrids available to me I have given some measurements of it (and of the wing) of the hybrid in the Table together with the range of corresponding measurements from both parent species. For comparison, the skulls of 13 adult male House Sparrows and 10 skulls of adult male Tree Sparrows from Bialowieza were used. On each of these skulls seven measurements were taken, as shown in the figure, to the nearest 0.1 mm. As will be seen from the measurements and indices, the hybrid skull is of size and proportions intermediate between that of *P. domesticus* and *P. montanus*. The length of the mandible, length of maxilla, breadth and height of braincase in the hybrid approach the maximum values of corresponding measurements on *P. montanus*. The skull differs more from that of *P. montanus* in the length of the profile, the lacrymal and interorbital breadths, all of which lie within the range of these measurements in *P. domesticus*. Two of the indices used (1 : 6 and 6 : 5) lie within the ranges for *P. montanus*, but the third (1 : 7) is characteristic of *P. domesticus*.



Method of measuring skull.

1. Length of profile
2. Length of mandible
3. Length of maxilla
4. Lacrymal breadth
5. Interorbital breadth
6. Breadth of brain-case
7. Height of brain-case

TABLE

Measurements of *P. domesticus* and *P. montanus* as compared with a hybrid.

Species	♂♂ *Passer domesticus* n = 13		♂ Hybrid	♂♂ *Passer montanus* n = 10	
Measurement	min.—max.	Av. ± SD		min.—max.	Av. ± SD
Wing*	77 — 85	—	74.6	67 — 74	—
1. Length of profile	29.4 — 31.3	30.51 ± 0.75	29.2	26.9 — 28.0	27.33 ± 0.38
2. Length of mandible	20.4 — 21.4	20.84 ± 0.61	19.0	17.6 — 18.5	18.03 ± 0.28
3. Length of maxilla	10.3 — 11.0	10.64 ± 0.42	9.8	8.7 — 9.4	9.14 ± 0.17
4. Lacrymal breadth	8.6 — 9.7	8.93 ± 0.33	8.8	7.0 — 7.6	7.28 ± 0.22
5. Interorbital breadth	4.5 — 5.7	5.18 ± 0.34	4.4	3.3 — 4.2	3.85 ± 0.24
6. Breadth of braincase	15.3 — 16.6	15.81 ± 0.54	15.9	14.6 — 15.8	15.05 ± 0.33
7. Height of braincase	12.3 — 13.1	12.72 ± 0.37	12.0	11.4 — 12.3	11.87 ± 0.24
Index 1 : 6	1.85 — 2.00	1.92 ± 0.10	1.83	1.74 — 1.84	1.81 ± 0.10
Index 1 : 7	2.35 — 2.46	2.39 ± 0.14	2.43	2.18 — 2.39	2.29 ± 0.17
Index 6 : 5	2.71 — 3.51	3.04 ± 0.28	3.61	3.57 — 4.66	3.92 ± 0.37

* According to Szczepski & Kozlowski (1953), males only.

The Bialowieza specimen had a two-layered skull, in other words, pneumatisation was fully completed: this occurs in House Sparrows at about 181–240 days. According to data given by Nero (1951) one could suppose the specimen to be of this age. However, prolonged boiling of the skull with sodium bicarbonate during its preparation revealed that the hybrid may be even older. By measurements, the hybrid skull is fairly similar to young, unossificated skulls of House Sparrow, but since pneumatisation was complete it could not be treated as a young bird. Moreover, it was shown that skull proportions change with age *i.e.* they are correlated with degree of pneumatisation (Ruprecht, in prep.). For example, index 6 : 5 decreases with age in *P. domesticus*, and its value for hybrid specimens is similar to 6 weeks old House Sparrows.

The occurrence of hybrids in the wild is very interesting and surely not a common phenomenon, in spite of the fact that, according to Meise (1951), differences in the behaviour and appearance of different sparrow species do not hinder their hybridisation.

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Measurements of some *Streptopelia* doves and their hybrids

by S. J. J. F. DAVIES

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INTRODUCTION

During studies of the behaviour of *Streptopelia* doves and their hybrids at the Sub-department of Animal Behaviour, Cambridge, the bill length, body weight and egg length of a range of species and their hybrids were measured. The species used were *S. roseogrisea*=*risoria* (Barbary Dove), *S. decaocto* (Collared Dove), *S. turtur* (Turtle Dove), *S. chinensis* (Necklace Dove) and *S. senegalensis* (Senegal Dove). Cole and Hollander (1950) have published data on the body weights of hybrid *Columba livia* x *Streptopelia risoria* which showed the hybrids to be intermediate between the two parents. Irwin and his co-workers (*e.g.* Underkofler and Irwin 1965) have made extensive studies of the inheritance of blood antigens in *Streptopelia* doves, although the differences they studied have been qualitative rather than quantitative. They have been particularly concerned with antigens specific to the hybrids which, they think, may be of general importance in the interpretation of heterosis. The material available at Madingley was extensive, both in number and type and enables the patterns of inheritance shown by these characters to be discussed, even though no detailed genetic analysis is possible.

A considerable proportion of this material has been deposited in the Bird Room at the British Museum (Natural History) where it will be available for future studies.

METHODS

All the doves were kept in outdoor cages in the grounds of the Sub-department of Animal Behaviour at Madingley, Cambridge. A few of the delicate hybrids were kept in small indoor cages during winter, but the doves were otherwise confined to 6 ft. x 6 ft. x 6 ft. wire-netting aviaries or in larger flights 18 ft. x 6 ft. x 8 ft. They were fed on a mixture of wheat, millet and cracked maize, and allowed free access to water and green food. Many of them bred under these conditions and the stock remained healthy throughout the work.

The bill measurements were all made by the author with a pair of vernier callipers, from the tip of the bill along its chord to the limit of the feathering on the top of the upper mandible. Most measurements were made within a period of a fortnight in the early spring of 1963, but a few were made subsequently until May 1964.

The body weights were measured on a table balance over the period 13–18 February, 1964, between 0900 hrs. and 1700 hrs. The doves were restrained in a box during weighing. No special precautions were taken to ensure that the bird's alimentary canal was empty when weighed, but it is thought that the diurnal variation in the food contained in the alimentary canal would not be great compared with the weight of the birds themselves.

Eggs whenever they were available between April 1963 and May 1964, were measured with vernier callipers by the author.

The "t" test was used to examine the significance of the differences between means unless otherwise stated.

RESULTS

(a) *Bill length*

Table 1 gives the mean bill length in centimetres of each species and hybrids kept at Madingley. The standard errors of the means are also given.

In the Necklace x Barbary Dove hybrid the mean bill length is almost identical with that of the Necklace, and significantly greater than that of the Barbary parent ($P<0.05$). In the Turtle x Barbary hybrid the mean bill length of the F_1 is intermediate between that of the two parent species and significantly different from both ($P<0.05$). In the Barbary x Collared hybrid* the mean bill length is greater ($P<0.05$) than that of the Barbary parent, and greater, but not significantly so, than that of the Collared. There was no sexual dimorphism in bill length in the Barbary and Collared doves, nor in their hybrid, but it did occur in the Necklace ($P<0.05$). The differences between the sexes of the Necklace x Barbary and the Senegal x Barbary were not significant in either case, and the data for the other dove types were inadequate for the possibility of sexual dimorphism to be tested.

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* Both Barbary x Collared and Collared x Barbary crosses are included, since there was no evidence of a difference between them.

TABLE 1

The mean bill lengths in centimetres of the doves kept at Madingley. Standard errors of the means are also given:

Species	*Sex*	*Mean Bill Length*	*Number Measured*	*S.E. of Mean*
Barbary	Both	1.66	46	0.012
Collared	,,	1.70	11	0.024
Turtle	,,	1.90	6	0.028
Necklace	Male	1.84	3	0.015
	Female	1.74	5	0.051
Senegal	Both	1.64	5	0.078
Hybrids				
C x B	Both	1.74	12	0.021
T x B	,,	1.74	11	0.028
N x B	Male	1.82	9	0.042
	Female	1.77	5	0.163
S x B	Male	1.66	6	0.028
	Female	1.60	4	0.016
N x C	Both	1.74	6	0.017

(b) *Body weight*

Body weight showed sexual dimorphism, and in some species and hybrids the males weighed more than females. Table 2 gives the mean body weight in grams of each sex for the doves, together with the standard errors of the means. Not all the species showed sexual dimorphism, but comparisons have been restricted to birds of the same sex. The mean body weight of Necklace x Barbary males is significantly ($P<0.05$) greater than that of Necklace males and greater than that of Barbary males but not significantly so. The Senegal x Barbary hybrid, on the other hand, is intermediate in body weight between its two parent species, and significantly different ($P<0.05$) from both.

TABLE 2

The mean body weights in grams for both male and female doves kept at Madingley; the standard errors of the means are also given:

	MALE			FEMALE		
Species	*Mean Body Weight*	*Number of Birds*	*S.E.*	*Mean Body Weight*	*Number of Birds*	*S.E.*
Barbary	164.2	17	4.3	165.7	15	4.1
Collared	171.6	11	5.5	176.5	6	7.6
Turtle	Both sexes: Mean 160.1			No. 7 S.E.		5.5
Necklace	125.7	10	5.4	102.8	7	5.3
Senegal	103.4	5	7.3	104.4	4	6.0
Hybrids						
C x B	166.9	9	3.1	154.4	3	2.6
T x B	163.7	6	8.9	159.5	4	6.4
N x B	174.0	9	8.0	171.6	6	8.7
S x B	133.5	6	2.9	139.9	5	7.7
Second generation birds						
F$_2$ (C x B)	156.7	6	1.4	154.5	3	5.3
(C x B) x B	167.5	4	1.0	145.0	1	—
(C x B) x C	154.3	3	3.1	157.5	1	—
(N x B) x B	162.4	4	4.5	144.0	1	—

(c) *Egg length*

Table 3 gives the mean egg measurements for individuals of the species and hybrids for which data are available. In some cases in which two or more females were laying in the same cage it was not possible to identify the eggs of the individuals and the measurements have been grouped together. An analysis of variance of egg length, given at the bottom of Table 3, shows that the variation within birds and within breeds is about the same and much less than that between breeds. For this reason the data from these groups of hens have been used as if the data came from a single hen.

In order to examine the data presented in Table 3, so that the significance of the differences between species and hybrids might be tested, a non-parametric statistical test, the Mann-Whitney U test (Siegel 1956) was used. The means of one dove type were ranked with the means of the type with which comparison was being made. The values of U calculated from these rankings gave a measure of significance for each comparison. The values of U are not given, in the interests of space. Of the pertinent comparisons only the Necklace x Barbary egg length is significantly different from that of each of its parent species, and intermediate between the two ($P<0.05$).

TABLE 3

The mean egg length in centimetres of individual doves, or groups of doves in some cases, representing the types kept at Madingley. The standard error of the mean is given in each case:

Species	*Individual*	*Mean Length*	*No. of Eggs*	*S.E. of Mean*
Barbary	Group	3.01	39	0.019
	a	3.06	5	0.021
	b	2.90	5	0.041
	c	3.01	2	0.050
Collared	a	2.82	4	0.011
	b	2.81	8	0.029
	c	2.92	1	—
Necklace	Group	2.74	5	0.086
	a	2.48	5	0.023
	b	2.64	9	0.051
	c	2.58	3	0.062
Senegal	a	2.46	4	0.025
	b	2.58	8	0.017
Hybrid				
C x B	a	2.87	2	0.039
T x B	Group	2.97	6	0.042
	a	2.94	14	0.023
	b	2.90	10	0.032
N x B	Group	2.78	19	0.036
	a	2.82	9	0.053
	b	2.87	8	0.037
	c	2.88	4	0.042
	d	2.87	4	0.036
	e	2.90	4	0.032
S x B	Group	2.78	9	0.023
	a	2.69	6	0.040
N x C	Group	2.96	16	0.025
	a	2.98	2	0.038
	b	2.82	2	0.007

Analysis of Variance of Egg Length

	Degrees of Freedom	*Mean Square*	*Variance Ratio*	*P*
Between breeds	8	0.5181		
			20.40	<0.01
Between birds within breeds	19	0.0254		
			2.07	<0.05
Within birds	185	0.0123		

The mean egg lengths of the Necklace x Collared hybrid, are significantly ($P<0.05$) larger than those of the Necklace parent and the means indicate that they tend to be larger than those of the Collared parent as well, but there are too few means to make a realistic test of the difference.

(d) *Relative variability of hybrids and pure species*

The variation shown by the hybrid material is of the same order as that shown by the pure species. Table 4 gives the coefficient of variation for the three measurements from all types of doves on which measurements were made. Inspection shows that the hybrids appear to be neither more nor less variable than the pure species, with the exception, perhaps, of the Necklace x Collared bill length, and the characters of the Collared x Barbary hybrids, especially body weight and egg length. Falconer (1960) gives a number of examples in which the F_1 generation is less variable than the parent species, but it is to be remembered that all his examples refer to crosses between lines within species, whereas all the dove hybrids discussed above are inter-specific crosses. It is interesting, therefore, to find that the Collared x Barbary cross is the one in which the F_1's tend to be less variable than the pure species, since current opinion (references in Vaurie 1961) suggest that these two birds, although specifically distinct, are more closely related to each other than are any other pair of species studied here. The reduced variability of the F_1 Collared x Necklace cannot be accounted for in this way, but it may be connected with the fact that all the Collared x Necklace hybrids were derived from one mating, whereas each of the other crosses was made several times with different birds.

TABLE 4

The coefficients of variation calculated from the morphological data given in Tables 1, 2 and 3. In the case of egg measurements the data from the group or if there is no group from the individual from which most measurements were obtained has been used.

	Bill	*Body Weight*		*Egg*
Species	*length*	*Male*	*Female*	*length*
Barbary	4.84	10.69	9.58	3.99
Collared	4.76	10.64	10.52	2.92
Turtle	3.63	Both	9.03	—
Necklace	6.33	13.56	13.51	6.93
Senegal	9.76	15.85	11.48	1.82
C x B	4.08	5.65	2.88	1.88
T x B	5.34	13.26	8.03	3.43
N x B	3.87	13.84	12.42	5.68
S x B	4.69	5.39	12.26	2.45
N x C	0.75	—	—	3.34
Second Generation Birds				
F_2 (C x B)	—	6.73	5.98	—
(C x B) x B	—	12.01	—	—
(C x B) x C	—	3.49	—	—
(N x B) x B	—	5.54	—	—

(e) *General*

Without many more breeding experiments no further genetic analysis can be made of these results. The patterns of inheritance shown in the morphological characters of the doves are well known in the inheritance of characters in other organisms. There is no correlation between the pattern of inheritance shown by one character in a particular cross and that shown by another. For example, the Necklace x Barbary hybrid follows the Necklace parent in bill length, but approaches the Barbary parent in body weight; it is intermediate in egg length.

In three cases the mean measure for the F_1 hybrid is above that of both parental species (Barbary x Collared—bill length; Necklace x Barbary—body weight; Necklace x Collared—egg length (possibly)), although in each case the difference is significant between the hybrid and one parent only. Exaggeration of a character in a hybrid beyond the range of both parents is a well known phenomenon and these results do no more than suggest that it occurs in the morphological characters of *Streptopelia* doves studied here.

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New information on the Solomon Islands Crowned Pigeon, *Microgoura meeki* Rothschild.

by Shane Parker

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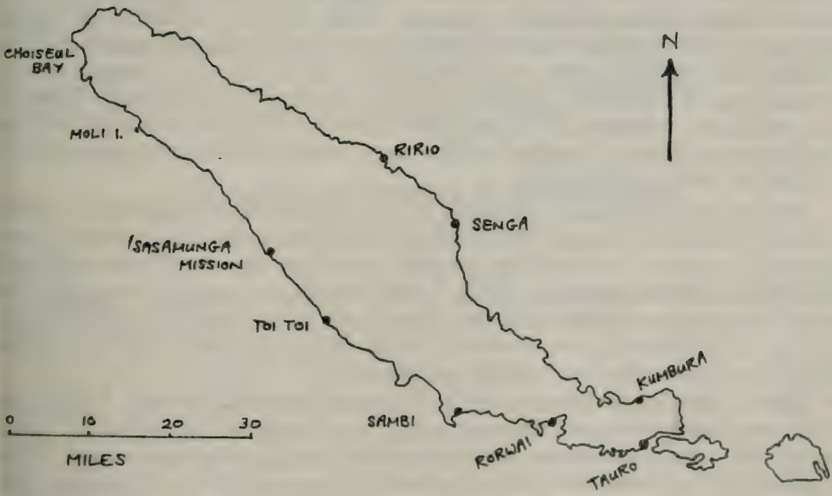
Perhaps the finest ornithological discovery of the naturalist and collector Albert S. Meek (1871–1943) was the striking ground pigeon *Microgoura meeki;* Meek himself held this view.

This aberrant species is still only known from seven skins (five in the American Museum of Natural History, one in the British Museum [Natural History], one untraced) and an egg (in the B.M. [N.H.]), obtained by Meek and his collectors during January 1904 on the island of Choiseul. I intend discussing the location of Meek's three camps on Choiseul in a later paper dealing with his three expeditions to the Solomon Islands; here I am concerned mainly with the information obtained about this pigeon by members of the Whitney South Sea Expedition in 1927 and 1929, and recorded in the Whitney journals.

Greenway (1958:311–2) regards *Microgoura* as probably extinct, basing this on the opinions of those Whitney collectors who scoured Choiseul for it without success. A less pessimistic conclusion may be drawn from a study of the fieldnotes of Hannibal Hamlin, deposited with the rest of the Whitney fieldnotes in the A.M.N.H.

In 1927, the Whitney Expedition, under Rollo Beck, collected for six days opposite Moli Island towards the north-western end of Choiseul. Hamlin wrote here (21 Nov.): "Mr. Beck has found that the natives savvy [*Microgoura*] but they give the impression that it is rare." Four days were then spent at the southern end of Choiseul Bay, a few miles to the north, but no mention of *Microgoura* occurs in this period. In 1929 Hamlin, with a team of collectors, returned to Choiseul for a more thorough search. No mention of the pigeon occurs in journal entries at northern Choiseul Bay, Ririo [modern Nio] or Senga [opposite Ruiana Island, probably modern Lengatura], two camps on the north-eastern coast, nor from inland areas reached from these camps.

Map of Choiseul, British Solomon Islands, showing localities mentioned in the text (based on Hamlin's sketch map).



At Sasamunga on the southern coast, however, Hamlin wrote (7 Oct.): "Enquiries about the *Microgoura* resulted in some new information: the bird they know here from my description is called "kukuru-ni-lova", lit. "pigeon-belong-ground," and is recalled only by the older men, who say that cats, introduced since the advent of the Mission, have destroyed so many that they cannot remember when one was last seen in the bush. And for the past ten years practically all the bush people have moved down to the salt water. The big river basin [Kolombangara R.] we traversed yesterday is said to have been a good place for them. The birds were easily caught by the boys in their hands after they had found a low-branched tree in which the pigeons roosted in twos and threes and fours by noting the manure on the ground underneath; they would simply wait their opportunity and seize them while sleeping.'' This area was searched for several days but no *Microgoura* was seen. Hamlin and his party also called briefly, not collecting, at several south-coast villages to the east of Sasamunga. At Toi Toi [near modern Katurasele] villagers confirmed that they had not seen the pigeon of late, and that cats gone wild had been known to make prey of it. At Sambi [probably modern Zongga] and Rorwai [modern Ruravai] the older inhabitants recognised the description of the bird and remarked on its beauty, imitating its call by a low trilling sound. Three natives of Tauro [modern Taora] on the eastern tip of Choiseul, told Hamlin that they had all seen *Microgoura* that year. Five days' collecting in this locality revealed no trace of the bird. Inhabitants of Kumbura village (now an uninhabited district), on the northern coast of the eastern tip of Choiseul, stated that they too had seen the bird that year. Eighteen days' search there revealed again nothing. At this point Hamlin called off the search.

It is significant that most of the localities at which there was native recognition of *Microgoura* are in the vicinity of riverine flats and swamps (Directorate of Overseas Surveys, 1959). It is highly probable that this pigeon, like its New Guinea relatives in the genus *Goura*, inhabits riverine and flooded forest and other swampy areas. (In this connection, Derek Goodwin has pointed out the analogy between the membranous frontal shield, the modified cere, of *Microgoura*, and the frontal rhamphothecal extensions of *Gallinula*, *Jacana* and other swamp-living genera). There is no mention amongst the Whitney fieldnotes for Choiseul of any collecting having been done in swamps, which may help to explain the expedition's failure to obtain this pigeon.

Mr. John Holsheimer, formerly of the Agricultural Department of the British Solomon Islands Protectorate, made enquiries about *Microgoura* during a visit to the Western District (*i.e.* Choiseul, the Shortlands and the New Georgia group) in 1953. Some natives professed to recognise the bird from his description and said that it was to be found on small islands (I. C. J. Galbraith, pers. comm.). Meek (1913:187) was told by natives that it occurred also on Ysabel and Malaita.

The continuing existence of the Solomon Islands Crowned Pigeon on Choiseul and perhaps other islands must therefore be admitted as a possibility. Its elusiveness may be ascribed, apart from human and feline predation, to a choice of habitat distasteful to collectors. A similar case is that of *Poliolimnas cinereus*, a little rail unrecorded from the Solomons until 1944 (Baker, 1948:9) and since then discovered on other islands in the group, often in some numbers (Galbraith & Galbraith, 1962:22).

It is convenient to point out here that the disposition of the crest of *Microgoura* in life may be different from the position depicted in the colour plate in *Novit. Zool.*, 1904 (pl. 21). The crest feathers of *Goura* arise subcoronally as well as coronally, sweeping up on either side of the head to form a laterally-flattened crest, like the interlacing of the fingers of two hands pressed palm to palm. In all three species the crest feathers begin at a point level with or slightly anterior to the eye. In *Microgoura* they occur much further back on the head, arising, as in *Goura*, from the sides of the crown as well as from the centre. This crest, has, in the preparation of the skin, been dorsoventrally flattened to lie upon the nape and upper back. It is possible, therefore, that in life the crest of *Microgoura*, though shorter and of a more dorsal position, may be erected in a fashion similar to that of *Goura*. Meek, who saw freshly-dead, if not living examples of the former, remarked upon the similarity between the crests of the two genera (Meek, 1913:129).

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I am indebted to Mr. Ian C. J. Galbraith, of the Bird Section, B.M. (N.H.), who, during a visit to the A.M.N.H. laboriously transcribed for me those passages in the Whitney journals relating to the search for *Microgoura;* Dr. Dean Amadon, of the A.M.N.H., who sent me a copy of Hamlin's sketchmap of Choiseul showing the localities visited; and Mr. Derek Goodwin and Mr. Colin Harrison, also of the Bird Section, B.M. (N.H.), for their valuable comments.

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On adherent colours of the plumage

by Peter Berthold

Received 10th January, 1967

Recently, Abdulali (1966) described in this journal the creamy colour of the Pied Imperial Pigeon, *Ducula bicolor*, which apparently is derived from the growing rump feathers.

This coloration is a further example of what I lately (Berthold 1966) termed "Haftfarben", "adherent colours". In this definition, all coloration not produced by pigments within the feather nor by special feather structures, but by substances adhering to the surface of the feather are summarized. To it belongs the "cosmetic coloration", "Schminkfärbung", by coloured oil of the preen gland, pink in the White Pelican, *Pelecanus onocrotalus*, in the Black-headed Gull, *Larus ridibundus* and some other Laridae (Stegmann 1956); yellow in the Great Pied Hornbill, *Buceros bicornis* (Vevers 1964). Further should be mentioned the purple coloration of the lower parts in the Mallard, *Anas platyrhynchos*, in the Teal, *A. crecca* and the Garganey, *A. querquedula*, which is due to a colour of a leaf-louse, described by J. A. Naumann (1818/1844). The discoloration by soot (industrial discoloration, industrial melanism, Hardy 1937, Harrison 1963) observed in many species, is a further example and there is a special case of partial albino House Sparrows, *Passer domesticus*, as a result of discoloration by chemicals (Woodward 1963). Grinnell (1921) found a bright yellow coloration of the lower surface in two Plain Titmice, *Parus inornatus*, derived from spores of some species of slime-mould (*Myxomycetes*). The purple coloration of a Garganey was Orseille-red (Conventz 1896), probably originating in the waste water of a dye-house. In the Red-crested Knorhaan, *Lophotis ruficrista*, red-coloured powder, containing porphyrin, stains the neck feathers of the bird (Völker 1964).

The most important adherent colour is iron oxide ("rust") shown in the plumage of more than 120 species (Berthold 1966). For instance, the rusty coloration of the Bearded Vulture, *Gypaëtus barbatus*, is due to amorphous iron oxide (Schüz 1927) and a bit of α-quartz, not within the feather, but only adhering to the surface. This iron oxide which loses colour, as Bruce (1791) stated, is not produced by the Bearded Vulture itself, but it sticks to the feathers from iron oxide stained soils of the biotopes of the bird. Iron oxide is mostly found in the Anatidae. These birds get their rusty colour from iron-oxidized water, and it does not adhere to the feather surface, but penetrates thin hollow spaces of the barbs, barbules, hooklets, etc., with a mean diameter of about 200–300 A.

Certainly, the number of known adherent colours will increase by further investigations.

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Some eggs from the New Hebrides, south-west Pacific

by Shane Parker

Received 12th January, 1967

From December 1933 to February 1934, and in August and September 1934, F. Shaw Mayer made a small collection of birds' eggs [now in the British Museum (Natural History)] from Tongoa and Shepherd, two islands in the New Hebrides. This collection is described below; no previous descriptions have been traced of the eggs of *Lichmera incana* and *Erythrura cyanovirens*, and little is known of the breeding of the other forms in this area. All measurements are in millimetres.

Megapodius freycinet layardi (Incubator Bird). Tongoa I., 14 Dec., 2 eggs collected. The larger, 86.4 × 48.2, is a pale stone-pink, the smaller, 75.8 × 48.7, is olive-buff, both showing white flecks where the superficial layer has worn off.

Rallus philippensis sethsmithi (Banded Rail). Shepherd I., 2 clutches, a c/4 on 5 Jan. (35.2 × 27, 35.6 × 26.5, 32.55 × 26.5, 34.5 × 27), and a c/5 on 1 Feb. (38.8 × 28.4, 38.1 × 27.9, 39 × 28, 39 × 27.9, 36 × 28). Tongoa I., a c/3 on 19 Dec., heavily incubated (38.3 × 27.9, 38 × 28.25, 38.35 × 28.3). This last clutch was taken from "a loose nest on the ground composed of straw and sticks." The above eggs are slightly glossy, and vary in ground colour from pale cream, sometimes tinged pinkish-buff, to a dull white, with a fairly even distribution of spots and blotches of rich brown, purplish-brown and lavender-grey.

The egg collected by Albert Eichhorn on Witu Island, near New Britain, on 8 July 1925 [now in the B.M. (N.H.)] and described by Hartert (1926: 173) as that of *Amaurornis olivacea*, the Bush-hen, is in fact an egg of the present species (race *lesouefi*). This re-identification is prompted by a comparison of the Witu egg with series of both species in the B.M. (N.H.) collection.

Chalcophaps indica sandwichensis (Green-winged Ground Pigeon). Tongoa I., 3 clutches: c/2 on 18 Aug. (27.25 × 21.1, 26.3 × 21.7), c/2 on 29 Aug. (28.4 × 22.7, 30.7 × 22.3) and c/2 on 2 Sept. (28.8 × 21.85, 27.3 × 21.8). These eggs are typical of the species, pale cream and fairly glossy.

Trichoglossus haematodus massena (Coconut Lory). Tongoa I., 2 clutches on 2 Sept., not separated: very rounded eggs, white and somewhat glossy, with faint stains from the nest (28.7 × 24.7, 28.25 × 24.9, 27.7 × 23.8, 29.4 × 24.7).

Collocalia esculenta uropygialis (Glossy Swiftlet). Tongoa I., 4 clutches from a colony in a large banyan tree: 1/2 on 1 Sept., (16.5 × 10.7), c/2 on 3 Sept., (16.5 × 10.7, 16.1 × 10.8), c/3 on 5 Sept., (16.1 × 10.8, 16.8 × 10.8, 16.1 × 10.7) and c/2 on 10 Sept., (17.7 × 10.7, 17.1 × 10.8). The elongate glossy eggs are pure white.

Zosterops lateralis vatensis (Grey-backed White-eye). Tongoa I., one clutch: c/2 on 3 Sept., (19.4 × 14, 18.9 × 13.5). The faintly glossy eggs are bluish-white.

Zosterops flavifrons perplexa (Yellow White-eye). Tongoa I., a c/3 on 1 Dec., (17.7 × 13.65, 18.2 × 13.6, 17.4 × 14). The faintly glossy eggs are pale blue.

Lichmera incana flavotincta (Silver-eared Honeyeater). Tongoa I., two clutches: c/2 on 21 Aug., (18.1 × 14.6, 17.6 × 14.5), and c/1 on 4 Sept., (19.1 × 13.7). The eggs are white or palest cream, very sparingly dotted and flecked with orange-brown, and are faintly glossy.

Erythrura cyanovirens regia (Red-headed Parrot Finch). Tongoa I., two clutches: c/1 on 21 Aug., (19.4 × 13.5) and a c/3 on 10 Sept., (18.5 × 13.55, 18 × 14, 18 × 13.6). The eggs are pure white and lack gloss.

Reference:

Hartert, E., 1926. On the birds of the French Islands, north of New Britain. *Novit. Zool.*, 33: 171–178.

The eggs of the Wattled Brush Turkey *Aepypodius arfakianus* (Salvadori) (Megapodiidae).

by Shane Parker

Received 28th January, 1967

The Wattled Brush Turkey inhabits mountain and hill forest of parts of New Guinea, from 850–2,800 metres, and is the only megapode occurring at these altitudes. Its mound-building has been described by Mayr (1930) but data on its eggs are scarce. Schönwetter (1961 : 201) referred to their colour (white) but gave no measurements, while Hartert (1930) gave measurements of a c/3 collected by Mayr in the Arfak Mountains, and of a c/4 taken by Albert Eichhorn in the Hydrographer Mountains.

In the collection of the British Museum (Natural History), besides these seven eggs collected by Mayr and Eichhorn, there are two clutches, a c/1 and a c/5 (the latter the largest so far recorded from a mound of this species) taken by F. Shaw Mayer at Saiko, 5,500–6,000ft., Bubu River, Upper Waria River, north-east New Guinea, during September 1936, and a c/2 obtained by Andrew Goldie in the Astrolabe Mountains.

The fifteen eggs in the National Collection, all a rough-grained white, give an average size of 93.2 × 60.8 (max. *101* × 60.5, 96 × *63.3*; min. *80* × 61.5, 88.5 × *58.5* mm.). These mensural data complement Schönwetter (*loc. cit.*).

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CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

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DINNERS AND MEETINGS FOR 1967

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A Correction

White, *Bull. B. O. C.*, vol. 87, 4, 1967, p. 63, remarks that *Spermestes cucullatus tessellatus* Clancey, 1964, was described from Natal, and states that he cannot separate it from *S. c. scutatus* (Heuglin).

I have at no time named a race of this mannikin from Natal, and the name *tessellatus* was given to the populations of southern Angola, adjacent Zambia, north-eastern South West-Africa, northern Botswana, and north western Rhodesia.

P. A. Clancey

Vidua obtusa in the Transvaal, South Africa

by Robert B. Payne

Received 1st March, 1967

Throughout much grassy open woodland in southern, central and eastern Africa occur two species of parasitic paradise whydahs, *Vidua* (*Steganura*) *paradisaea* (Linn.) and *V. obtusa* (Chapin). While *V. paradisaea* ranges through most of the Transvaal and Natal in the Republic of South Africa, *V. obtusa* has been recorded southwards only to the northern part of Rhodesia (McLachlan and Liversidge, 1957; White, 1963). On 2nd February 1967 two adult male *V. obtusa* were seen on a telephone wire in a grassy citrus orchard five miles east of Tzaneen (23° 50′ S., 30° 09′ E.), in the eastern Transvaal, at an elevation of about 1,800′ at the foot of the Transvaal Drakensburg escarpment. The following day two males and a female were collected at the same spot in late afternoon when they flew to the same perch from feeding in the grass.

The two males are readily identifiable as *Vidua obtusa* (Chapin) upon comparison with specimens of paradise whydahs in the National Museum of Rhodesia, Bulawayo. Wing lengths (chord) are 84 and 81 mm. These measurements fall within the range of variation of 26 adult *obtusa* males in breeding plumage (81–87 mm.); wing lengths of 68 adult male *paradisaea* range from 77 to 83 mm. Lengths of the ornamental second pair of rectrices are 210 and 209 mm.; widths of the ornamental inner pair of rectrices are both 37 mm. It should be pointed out that *obtusa* has the shortest, broadest tail of any of the forms of paradise whydah in Africa

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(White, 1963), while *V. paradisaea* has the longest, most attenuated tail of any of the paradise whydahs. In tail length and form these two sympatric taxa comprise the extremes of geographic variation, while allopatric subspecies of the whydahs in northern and western Africa (where *V. obtusa* is absent) are all intermediate. Tail length and form thus appear to reveal character displacement among sympatric populations of paradise whydahs as a result of selection for behavioural isolating mechanisms. The male breeding plumages of *Vidua obtusa* and *V. paradisaea* are also distinct in colour of the buffy band on the nape and in colour and extent of the chestnut breast markings. In all of these characters the Tzaneen specimens agree with *obtusa*.

No characters useful in distinguishing between females of these two species have been described. It should prove possible to separate females from areas where the two occur together by comparison with females from areas where only a single form occurs. Two female paradise whydahs from the Mwinilunga district of north-western Zambia, where *Vidua obtusa* and its host *Pytilia afra* occur and *V. paradisaea* and its host *P. melba* are unknown, measure in wing length 83 and 82 mm. In Botswana, where *V. paradisaea* is the only known species of paradise whydah and *P. melba* is the only pytilia, two females measure 76 mm. each, the smaller apparent size of female *V. paradisaea* thus agreeing with the smaller size of males of this species. The Tzaneen female has a wing length of 79 mm. The paucity of available comparative material of a high probability of correct identification makes it impossible to identify the Tzaneen female from the skin alone. However, the female was shot from the same perch used by a male *V. obtusa* less than one minute earlier, and no *V. paradisaea* were seen in the area during 10 days of observation, so the female is most likely *V. obtusa*. This female constitutes the first breeding record of the species for South Africa, as it had an egg in the oviduct.

The previous southernmost specimen of *Vidua obtusa* was taken in Rhodesia in the Melsetter district, about 330 miles north of Tzaneen (Swynnerton, in Friedmann, 1960), while the Broad-tailed Paradise Whydah has also been seen at Plumtree, Rhodesia (Irwin and Benson, in press), 260 miles from Tzaneen.

Nicolai (1964) has proposed that *Vidua obtusa* is parasitic solely on a single host, *Pytilia afra*, on evidence of vocal mimicry of *P. afra* (and of no other species) by captive male *Vidua obtusa* in aviaries in Germany. Similarly Nicolai found captive *V. paradisaea* mimicking *Pytilia melba*. The single-host theory has also been proposed by Neunzig (1929) on the basis of similarities in mouth markings of nestlings. On the other hand Friedmann (1960) fails to recognise more than one species of paradise whydah, and he lists records, many of them questionable, of several species of hosts, among them *P. afra* and *P. melba*. Throughout the range of the forms of paradise whydahs occur the corresponding *Pytilia* species required by the single-host theory. Comparison of the ranges of museum specimens in the National Museum, Bulawayo, indicates that the range of *Vidua obtusa* corresponds to the range of *Pytilia afra* and the range of *V. paradisaea* falls just within the range of *P. melba*. The range of *P. afra* is known to extend southward into the northern Transvaal as far as the Zoutpansberg mountains (McLachlan and Liversidge, 1957). On 11th February 1967 I saw *P. afra* on two occasions at the edge of moist open woodland (30 per cent tree cover above 10 feet) with a well-developed shrub layer and wet areas of tall grass less than a half mile from the site of collection of the whydahs. No *P. melba* were seen. The correspondence of the geographic ranges of *V. paradisaea* with *P. melba* and of *V. obtusa* with *P. afra* and the absence of the parasitic whydahs beyond the limits of the range of each host is in agreement with the single-host theory.

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Notes on *Apalis cinerea* and *Apalis chariessa*

by Melvin A. Traylor

Received 13th February, 1967

Apalis cinerea (Sharpe)

Recent authors have considered that the nominate race of *Apalis cinerea* extends without geographic variation from the Cameroon highlands to Kenya. This is not so, although the type of variation shown is such that the division of *cinerea* into several races would be more confusing than enlightening.

A. cinerea has been considered a variable species, particularly on the colour of the crown. Much of this variation is more apparent than real, due to the belief that the sexes are alike. Actually, when the skins from any one locality are segregated by sex, the females are found to have darker, browner crowns than the males. It is only when series from different localities are compared sex for sex that a pattern of geographic variation emerges.

Starting in Kenya, birds from the highlands, from Mau to Mt. Kenya and Nairobi, are dark above with crown heavily washed with brown. To the north and west of the central highlands, from Nandi to Mt. Elgon and east to Marsabit, Mathews Range and Laikipia, the crowns are distinctly paler, those of some of the males merging into the grey mantle without the usual sharp line of demarcation. These pale-crowned populations extend into Uganda, as far as Toro and Ankole. However, in the west of the range, in the Cameroon highlands, the populations are dark again, and not to be distinguished in any way from the Kenya highland birds.

For all of these populations names are available. The pale-crowned birds would, of course, be nominate *cinerea*, since Mt. Elgon, the type locality, falls within this range. The Kenya highland dark-crowned birds have available *granviki* Grote, 1927, which was proposed as a new name for *minor* Granvik, 1923, type locality Kiambu, near Nairobi. The Cameroon dark-crowned birds could be called *funebris* Bannerman, 1937, type locality Oku. However, as noted above, I feel that the recognition of three races, two of which can not be distinguished, is a poor solution, and I prefer to keep all three in a single variable race *cinerea*.

Apalis chariessa (Reichenow)

In 1879, Reichenow described *Apalis chariessa* on the basis of two males from Mitole, lower Tana River. The species was not again taken in Kenya until 1961 when Burt L. Monroe Jr. collected an adult male 23 miles north of Garsen, also on the lower Tana and practically topotypical. Through the kindness of George Lowery, Museum of Zoology, Louisiana State University, I have been able to examine this specimen and to compare it with a male from Chiperone Mt., borrowed through the good offices of Mrs. B. P. Hall of the British Museum.

In 1934 Vincent described *Apalis macphersoni* from Cholo Mountain, Malawi. The following year he realized that *macphersoni* was the same species as *chariessa*, but considered it a valid subspecies because of its greater size. For many years *macphersoni* was recognised, until Mackworth-Praed and Grant (1955) and White (1962) both placed it in the synonymy of *chariessa*. With Monroe's fresh topotype available, it is clear that *macphersoni* is strikingly larger than *chariessa* and must be recognized. Comparative measurements of males from specimens and the literature, are:

	Wing	*Tail*	*Culmen*	*Tarsus*
chariessa				
L. S. U.—Lower Tana R.	48	67	12.5	16
Reich., Vög. Afr. 3: 609	47 (45)	55, 65	(10, 11)	16, 17
macphersoni				
B. M.—Chiperone Mt.	53	82	14	19
Vincent, type of *macphersoni*	54	94	13	19

The wing length of the type of *chariessa* is given as 47 mm. in the original description and 45 in *Vögel Afrikas*; in either case much smaller than *macphersoni*.

As is evident from the above measurements, *macphersoni* is larger in all dimensions, the most striking differences on direct comparison being those of tail and tarsus. Reichenow's bill measurements were probably taken from the exposed culmen rather than culmen from base and are not strictly comparable. The only colour difference lies in the chestnut wash below the black throat mark, which forms a clearly defined band across the breast in *chariessa*, but is only an ill-defined wash in *macphersoni*. Moreau (1940) recognized this distinction when he attributed the birds from Ulguru to *macphersoni*.

The ranges of the two races are:

chariessa—confined to the lower Tana River.

macphersoni—forests on the Uluguru Mts., Tanganyika, the mountains of southern Malawi, and Chiperone Mt., Moçambique.

References:
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Grote, 1927, *Orn. Monatsb.*, 35: 23.
Mackworth-Praed and Grant, 1955, *Birds E. and N.E. Afr.* 2: 413.
Morean, 1940 *Ibis:* 461.
Reichenow, 1879, *Orn. Centralb.*, 4: 114.
Vincent, 1934, *B.B.O.C.*, 54: 177.
— 1935, *B.B.O.C.*, 55: 122
White, 1962, *Occ. Pap. Nat. Mus. So. Rhod.*, 26b: 701.

Geographical variation in Philetairus socius *(Latham)*

by C. M. N. WHITE

Received 4th February, 1967

When I dealt with this species in my *Check List* (1963) the material available was very limited. Additional material shows that four forms must be recognised:

P. s. geminus Grote

Scaly edges to upper side are white; under side almost white. Region of Etoscha Pan, Ovamboland.

P. s. socius (Latham)

Scaly edges to upper side buff; under side greyish sandy. South-west Africa south of last to the Orange river.

P. s. eremnus Clancey

Darker, more grey-brown, less sandy above than the nominate and with a darker and greyer, less sandy buff under side. Interior of north-west Cape Province to Asbestos Mts. and Prieska.

P. s. lepidus Smith

Warmer and browner above than nominate race; crown redder and under side a darker warm buffy. Southern Bechuanaland (Botswana) and Kimberley area of Cape Province to west Transvaal and adjacent Orange Free State.

I am indebted to Professor Winterbottom for facilities to examine material in the Cape Town Museum and to Mr. M. P. Stuart Irwin for facilities at the National Museum, Bulawayo.

The apparent affinities of *Ifrita*

by C. J. O. HARRISON

Received 22nd June, 1967

In a short communication Desfayes (1967) has proposed that *Ifrita kowaldi* of New Guinea, usually regarded as the representative of a monotypic genus of babbler, of the subfamily Cinclosomatinae, should be removed to the true flycatchers, Muscicapinae, and be regarded as a member of the genus *Niltava*. The proposal is apparently based on a superficial resemblance of the blue crown and warm buff body colour of *Ifrita* to those of some *Niltava* species, and on the fact that while *Niltava* species are more terrestrial than most flycatchers, *Ifrita* appears to be mainly terrestrial and feeds largely among fallen branches, and also on the trunks and lower branches of standing trees (Mayr and Rand 1937). These criteria do not appear to justify Desfayes proposal, but in order to test the suggestion *Ifrita kowaldi* is here considered in relation to species of the genus *Niltava* on the one hand, and species of the Australasian babbler genera *Eupetes*, *Todopsis* and *Malurus* on the other. The last two have been included on the basis of two papers (Harrison and Parker, 1965; Harrison, in press) in which it has been shown that there are grounds for regarding a group of genera of the Malurinae—namely *Malurus*, *Stipiturus*, *Amytornis*, *Chenorhamphus*, *Todopsis* and *Clytomyias*—as a specialised Australasian group of babblers.

PLUMAGE COLOUR

1. *Crown of the head*. The crown of *Ifrita kowaldi* is glossy blue with a black patch in the centre and a narrow black border passing across the forehead, back above the eyes, and around the nape where it is very narrow. The crowns of *Niltava grandis* and *N. sundara* are uniformly glossy blue with black on the forehead and sides of the head. On the nape they merge into a dark blue mantle. In both *Ifrita* and *Niltava* this colouring is formed by glossy blue tips to black feathers. In subadult specimens of *Ifrita* these feathers seem broader and there is an unbroken blue coronet, but in adults the feathers appear more lanceolate and the coronet appears to consist of more distinct blue tips with some black feathering showing between, although this may be due, in part, to the make-up of the skins. The crown feathers of *Todopsis wallacei* are similar in having blue tips with black feathering showing between, although here the blue is paler and the blue tips are present over all the crown.

Glossy blue feathers are typical of *Malurus* species, and in *M. coronatus* of northern Australia the blue structural colour is combined with chestnut-red melanin to give a magenta colour. These magenta feathers are homologues of the blue ones and the male of *N. coronatus* has a crown of glossy magenta feathers with a black patch in the centre and a black band extending from the forehead back over the eye and on the ear-coverts, to end as a narrow black band on the nape. In respect of the distribution of colour on the crown *I. kowaldi* most closely resembles *M. coronatus*, a fact which was earlier drawn to my attention by S. A. Parker.

2. *Sides of head and throat*. In *Ifrita kowaldi* the superciliary area is black and the ear-coverts and lores are mainly dark brown with a few fine buff rachial streaks on the former. There is a conspicuous white stripe along the upper ear-coverts, a buff eye-rim, and an indistinct buff patch near the nostrils.

In *Niltava* both sexes have a patch of glossy blue feathers just posterior to the ear-coverts. The males have uniformly black sides of the head and throat. The females have pale buffish throats and the sides of the head are browner, with some fine buffish rachial streaks. *N. sundara* females have a crescentic white patch just below the throat.

The babbler species tend to have conspicuous and variable patterning on the sides of the head and throat, but *Todopsis wallacei*, in addition to resembling *Ifrita* in crown colour, also resembles it in that the superciliary area is black, the ear-coverts dark with a conspicuous white stripe along the upper ear-coverts and there is a white eye-rim and white tips to the feathers near the nostrils. The throat is white with a faint buff tint. The dark ear-coverts are formed by the blackish basal portions of lanceolate feathers which are white towards the tip and upswept to form part of the white streak. While dissimilar in this respect from similar feathers in *Ifrita* the white tips may relate to the pale buff streaks on the ear-covert feathers of the latter in that both represent a terminal loss of pigment. *Malurus alboscapulatus* females also show pale buffish rachial streaks on the ear-coverts, although these are less well-defined than in the species mentioned, and they show a pale eye-rim and pale feather patches at the nostrils, as also do females of *M. coronatus*.

3. *Body colour. Ifrita kowaldi* is warm buff ventrally, and olive brown dorsally and on wings and tail. The only distinctive marks are pale buff tips on greater and median wing-coverts. The females of *Niltava* are varying shades of olive brown, paler ventrally and immaculate. The only possible suggestion of resemblance to *Ifrita* is in the male of *N. sundara* which has a warm orange-buff underside. Dorsally it is dark blue and other *Niltava* species are dark blue or grey below as well.

There is no suggestion of direct similarity between *Ifrita* and any of the babbler species in body colour, save that females of *Malurus* species tend to be brown above and buffish below. *Todopsis wallacei* does, however, have white tips on the median wing-coverts, and similar tips tending to become elongated to stripes on the greater wing-coverts. *Eupetes leucostictus* and some *Cinclosoma* species also show white or pale spots on the tips of the wing-coverts.

GENERAL MORPHOLOGY

The relatively large head and short body of *Ifrita* give no obvious evidence of affinities.

1. *Tail.* The tail is short in *Ifrita*, to judge from the skins about a third of the total overall length. By comparison the tail in *Niltava* is much longer and represents about half the total length. In the babblers it varies from about half the total length in *Malurus alboscapulatus* of New Guinea and more than half in the Australian species, to about half in *Todopsis wallacei*, and a little over a third in *Eupetes*.

2. *Wings*. In *Niltava* species the closed wings are relatively long and straight the tips extending about half-way down the tail. In *Ifrita* they are short and extend barely beyond the base of the tail. In *Todopsis* they are longest, extending nearly a third of the way down the tail, in *Malurus* they are shorter, only a little beyond the base of the tail, and in *Eupetes* falling short of the tail.

A feature of the wings of *Eupetes* is that they are strongly curved to fit closely to the sides of the bird and curve downwards in flight so that in skins they tend to curve inwards on the ventral side of the body. This strong curvature is also apparent in the wings of *Ifrita.*

There are no useful differences in wing-formulae.

3. *Legs and feet.* Desfayes (1967) commented on the fact that *Ifrita* had markedly longer and stronger legs and feet than *Niltava* species, and this is a typical character of all the babblers.

4. *Bill.* The bill of *Ifrita* is relatively short and strong, with unfeathered nostrils, and with a slight tomial notch. The bills of *Niltava* species are similar but with a marked hook at the tip and with nostrils concealed by short dense feathering. The bills of the babbler species under consideration vary in length and compression but resemble that of *Ifrita* in the unfeathered nostrils, and also possess the slight notch.

5. *Rictal bristles. Ifrita* possesses a row of fine bristles protruding forward and downward on either side of the base of the upper mandible, and three on either side of the forehead projecting forward over the nostrils. *Niltava* species have a row of five pointing down and outward at either side of the gape and a row of four shorter ones pointing forward over each nostril. Most babbler species appear to possess them at the sides of the gape. In

addition *Todopsis wallacei* has a single long one over each nostril, *Eupetes leucostictus* has two fine ones and a possible small third one over each nostril, *Chenorhamphus grayi* has two long projecting bristles and a third that curves downward arising over the nostrils, and most of the other babblers considered here appear to have none other than at the gape.

6. *Plumage.* The body plumage of *Ifrita* is soft and dense, especially in the region of the lower back, and, in the skins at least, appears as a thick layer covering the base of the tail. This is not apparent in *Niltava* species, but is present in similar fashion in *Eupetes* species. It is absent in the Malurinae, but here the dorsal feathering is specialised and the amount of feathering on the lower rump may be associated with the tendency to carry the tail cocked high.

CONCLUSIONS

In its plumage pattern and colour *Ifrita kowaldi* shows some similarities to *Todopsis wallacei*, and to a lesser extent to *Malurus coronatus* and *Eupetes leucostictus*. These similarities are more fundamental than the superficial resemblance of the blue crown and warm buff body colour of *Niltava*.

In its short tail, short curved wings, long and strong legs and feet, unfeathered nostrils, and dense plumage, *Ifrita* shows a resemblance to the babbler species with which it has been compared, and differs in these respects from *Niltava* species. The evidence of the bill and rictal bristles is inconclusive.

The possession of a distinctive, patterned plumage in both sexes and in subadult birds, such as *Ifrita* possesses, is more typical of babblers than of flycatchers. It is a pity that the juvenile plumage of *Ifrita* is not known, since this might be partly diagnostic.

There would appear to be no reason, on the basis of the characters at present available, to suggest that *Ifrita kowaldi* is a flycatcher, and certainly none to justify making it congeneric with *Niltava*. In view of some of the similarities discussed here its ultimate taxonomic placing might depend on a reviser's opinions concerning the affinities of the Malurinae (*sensu stricta*).

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Harrison, C. J. O. and Parker, S. A. 1965. The behavioural affinities of the Blue Wrens of the genus *Malurus*. *Emu* 65: 103–113.
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Campethera abingoni (Smith), 1836, and its type-locality

by P. A. Clancey

Received 24th June, 1967

Writing in the *Bull. B.O.C.*, vol. lxxxv, 4, 1965, pp. 64, 65, I showed that the type-locality Durban, Natal, for nominate *Campethera abingoni* (Smith), 1836, was wrong. This was based on the original range data given by Smith in his *Rep. Exped. Expl. Centr. Afr.*, 1836, 53, where it is clearly stated he (Smith) took the paratypical material in the same locality as the previously described species, namely, *Campethera bennettii* (Smith), 1836: Kurrichaine, *i.e.* Zeerust, western Transvaal. This finding resulted in the sinking of *C. a. smithii* (Malherbe), 1845: Marico R. western Transvaal, into the synonymy of nominate *C. abingoni*, with its type-locality adjusted to Kurrichaine, *i.e.*, Zeerust, western Transvaal, and the introduction of *C. a. constricta* Clancey, 1965: Gillitts, near Kloof, Natal, for the Natal and Zululand populations. White, *Bull. B.O.C.*, vol. lxxxvii, 4, 1967, p.61, contests the accuracy of my interpretation of the case, arguing that in his view the words (as given by Smith in the original range citation) are ambiguous and need not have a geographical connotation at all. This is not so. There is no ambiguity in the statement by Smith that his *Chrysoptilus Abingoni* occurs alongside his *Chrysoptilus Bennettii.* Furthermore, this situation does not obtain at Port Natal, *i.e.*, Durban, Natal, the putative but erroneous type-locality of *C. a. abingoni*, because in Natal south of the Tugela R. only the Golden-tailed Woodpecker *C. abingoni* is present. *C. bennettii* penetrates into the north of Zululand, reaching south only to about the Umfolozi R. From this it will be appreciated that Smith's statement on the distribution of *C. a. abingoni* cannot apply to Natal, as he could not have collected Golden-tailed and Bennett's Woodpeckers together in this region.

The mistaken belief that the type-locality of nominate *C. abingoni* should be Durban, Natal, and not Zeerust, western Transvaal, probably dates back to Malherbe, writing in 1845. Nowadays the so-called first reviser principle is seen as a panacea for many nomenclatural ills, but a person is only a first reviser when he has two or more sets of circumstances or two or more names, enumerates these in print and after due argument selects one set of circumstances or one name in preference to the other(s). The mere unquestioning use of a type-locality or name, or what have you, does not single out a person as a first reviser, and to be a first reviser one must adjudicate between two or more issues and decide in favour of one. For those who wish to invoke the first reviser principle to resolve (to their satisfaction) the present question, it would appear from a critical study of pertinent literature on *C. abingoni* that I acted as the first reviser when I published my 1965 note.

Should the International Commission on Zoological Nomenclature be petitioned to effect a ruling on this issue, they will not be called upon to resolve a nomenclatural tangle but to give validity to the erroneous reading of basic information by authors operating subsequent to the publication of the pivotal name by Smith in 1836. One may ask if the International Commision would not be exceeding its function and powers if it endeavoured to validate Durban, Natal, as the type-locality of *C. a. abingoni.*

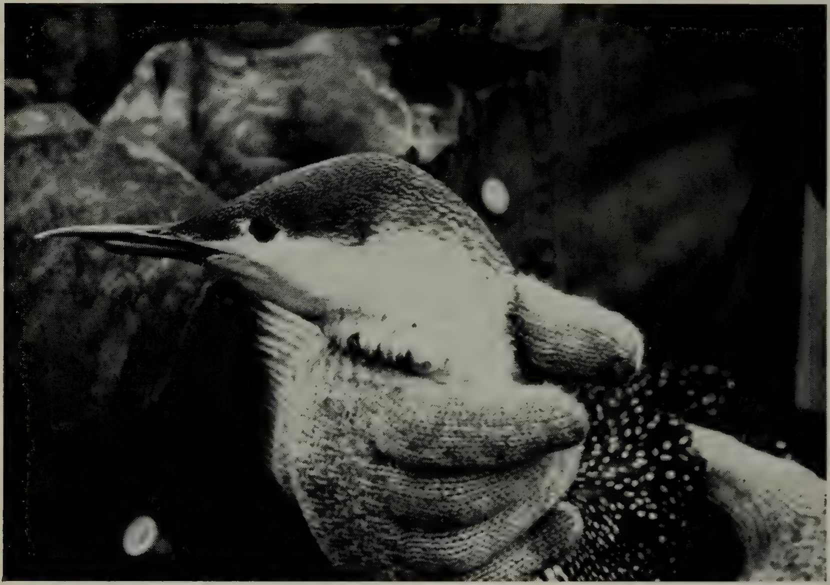
A congenital abnormality in the bill of a Red-throated Diver

by BRYAN L. SAGE

Received 20th February, 1967

On 29th January, 1967, on the Westwood Marshes, Walberswick, Suffolk, I caught a Red-throated Diver *Gavia stellatus* (Pontoppidan) that exhibited an interesting bill deformity.

The bird was normal in every way except for the bill in which the lower mandible was approximately 22 millimetres shorter than the upper, that is to say it was about half as long (see photograph). This appeared to be a congenital condition as there was no indication that the lower mandible had ever been damaged in any way. The tip of this mandible was quite blunt and perfectly rounded. Apart from being slightly oiled under one wing the bird was in perfect condition, and was seen to catch fish, so that the bill deformity appeared to have no detrimental effect. I have not come across any previous records of bill deformities in this species.



I am not aware of any discussion on the genetics responsible for the occurrence of what may be termed "short lower bill" in birds, but Harrison & Kear (1962) report the similar condition of "short upper beak" in wildfowl embryos that had failed to hatch, and in which it was sometimes associated with acrania or meningocoele. The condition of "short upper beak" is well known in poultry and in at least one instance has been traced to a recessive gene.

References:
Harrison, Jeffery G. and Kear, Janet (1962) "Some Congenital Abnormalities in the Beaks and Skulls of Wildfowl". *Veterinary Record* 74, pp. 632–633.

Systematic notes on austral African sandgrouse

by P. A. Clancey

Received 22nd February, 1967

Of the four species of sandgrouse occurring in the South African Sub-Region, all of which are variably polytypic, three are represented by two or more races in the area. Recent studies of the variation in these three species of *Pterocles*, namely *P. bicinctus* Temminck, *P. burchelli* Sclater and *P. namaqua* (Gmelin), carried out in the Durban Museum are reported upon below. For the loan of additional material to augment that already in our collection, I am grateful to the Directors of the South African Museum, Cape Town (through Professor J. M. Winterbottom), the East London Museum (through Mr. C. D. Quickelberge), the Transvaal Museum, Pretoria, (through Mr. O. P. M. Prozesky) the State Museum, Windhoek (through Mr. P. J. Buys) and the National Museum, Bulawayo (through Mr. M. P. S. Irwin).

1 *Pterocles bicinctus* Temminck

The variation in the Double-banded Sandgrouse has been dealt with by various workers in the course of the compilation of standard works and check-lists, and in recent years notably by Benson (1947), McLachlan and Liversidge (1957), Mackworth-Praed and Grant (1962), Clancey (1965) and White (1965), but the only detailed study of the variation in the species appears to be Macdonald's report of 1954. In studying the variations in this and other sandgrouse, care must be exercised over soil staining in many populations and the colour leaching effected by the rays of the sun, particularly the former. Seasonal movements of some populations also require to be considered in arriving at decisions on races.

Variation in *P. bicinctus* affects general size, populations of small-sized birds occurring in the extreme north-west of the range and in the extreme north-east, as well as coloration. Broadly speaking, desertic and sub-desertic populations are pale, while those from the moist and more densely vegetated east of the range are darker and more saturated, showing a considerable development of chestnut over the upperparts and wings. I find five races may be satisfactorily admitted.

In his 1954 report, Macdonald proposed *Pterocles bicinctus elizabethae* from Spitzkopje, north-western South-West Africa, on the basis of two specimens. This race was described as being paler and larger than the nominate race of *P. bicinctus* Temminck, 1815, Great Fish R., Great Namaqualand, South-West Africa, restricted to Gibeon by Macdonald. Much doubt still surrounds the validity of *P.b. elizabethae*, but a recent study of the entire Transvaal Museum series of this sandgrouse, which includes a good sample from the Namib edge of north-western South-West Africa, from near whence *P.b. elizabethae* was described, as well as specimens from as far south as Ariamsvlei, just a little to the north of the Orange R., to the west of Upington, confirms that the taxon is a straight synonym of the nominate race. Specimens from over most of South-West Africa are more or less indistinguishable from one another on the basis of colour, and north-western birds are not paler than the southern, topotypical, ones. Nor do I find much size difference, and the specimen chosen by Macdonald as the Type of *P.b. elizabethae* is actually beyond the normal size-range of South-West African Double-banded Sandgrouse, 186.5 mm. being the longest wing measured by me, though birds with wings of up to 190 mm. and over occur further east on the plateau, in the Caprivi Strip and northern Botswana.

In northern Damaraland a shift to a darker dorsal facies in both sexes is to be seen in the assembled material, and the populations of northern South-West Africa from Etosha and Ovamboland eastwards to the Caprivi Strip, northern and north-western Botswana, south-western Zambia, and, presumably, adjacent southern Angola from south-eastern Huila eastwards, can be conveniently arranged in a subspecies which is well differentiated from *P.b. bicinctus*. The differences shown are probably associated with the higher rainfall enjoyed by these regions, but the tendency to a strongly black and white appearance to the dorsal surfaces, especially in females, suggests a reaction to the calcareous and saline substrata on which these populations are largely resident. This form, for which the name *P.b. chobiensis* (Roberts) 1932: Kabulabula, Chobe R., is available, is best marked in the female, which is much less sandy than *P.b. bicinctus*, the dorsal feathering barred and streaked with jet black rather than brown, the black well developed over the scapulars and tertials, and with larger and more numerous white apical spots to the feathers of these surfaces. Below, the form is greyer over the mid- and lower-breast, the barring finer. The male is also darker, the mantle, scapular and tertial feathering more greyish-brown and often barred with black, less Hair Brown (Ridgway, 1912), and with the white spots larger and more chalky in appearance. On the underside the black transverse barring is coarser and the ground colour duller. *P.b. chobiensis* also ranges somewhat larger than *P.b. bicinctus*. The race has had a checkered existence ever since it was proposed in 1932, presumably resulting from the fact that in the western extremity of its range it reaches to Ovamboland, the Etosha Pan region and northern Damaraland. It is well marked, however, and requires to be admitted in our formal arrangement of the populations into subspecific taxa.

P.b. ansorgei (Benson), 1947: Huxe (=Uchi), Benguela, Angola, is generally credited with being paler than *P.b. bicinctus*, but this is barely perceptible over the upperparts of the material available to me, but the form is maintainable on the basis of smaller size, and the fact that in the male the barring over the middle and lower ventral surface is finer and often somewhat scale-like. The race concerned is confined to the arid coastal strip of Moçamedes and Benguela, in Angola.

To the east of the range of the three dry country races of the Double-banded Sandgrouse, *P.b. bicinctus*, *P.b. ansorgei* and *P.b. chobiensis*, are to be found populations of very reddish birds, which are on the whole more heavily barred above, the pale interspaces deep Sayal Brown in colour. This complex of populations is divisible into two races on the basis of size, the birds of the hot eastern lowlands being separable as *P.b. usheri* (Benson), 1947: Tambara, lower Zambesi R., Moçambique, those of the elevated and temperate plateau as *P.b. multicolor* Hartert, 1908: Rustenburg, western Transvaal. *P.b. multicolor* may range further to the north-west than at present understood, because a specimen from Swartbooi's Drift, on the Cunene R., on the southern Angola/northern South West African border is applicable to it, though its presence so far west may only indicate marked random dispersal of some birds in the non-breeding season.

The characters and ranges of the five races of the Double-banded Sandgrouse as defined in this recent study are as follows:

(a) *Pterocles bicinctus bicinctus* Temminck, 1815: Gibeon, Great Fish R., South-West Africa.

(Synonyms: *P.b. pallidior* Forbes and Robinson, 1900: Otjimbingwe, Swakop R., South-West Africa, and *P.b. elizabethae* Macdonald, 1954: Spitzkopje, Swakopmund district, South-West Africa).

Male with mantle, scapulars and tertials about Drab, the feathers variably marked with whitish apical spots and incompletely barred with Pinkish Cinnamon. Below, with lower breast and adjacent surfaces buffy-white, finely barred with blackish-brown. Female with mantle, scapulars and tertials Cinnamon-Buff, terminally spotted with off-white, and barred and zoned with blackish-brown. Wings of 10 ♂♂ 172–186.5 (180.9), of 10 ♀♀ 171–185 (177.1) mm.

Range: North-western Cape Province from the lower Orange R., and the northern Cape in Gordonia, to Great Namaqualand, the Damaraland highlands and the Kaokoveld, in South-West Africa. Grades into *P.b. chobiensis* and *P.b. ansorgei* to the north of its range.

(b) *Pterocles bicinctus ansorgei* (Benson), 1947: Uchi, Benguela, Angola.

Similar to *P.b. bicinctus*, but smaller in size. Males averaging a paler drab above, and on the underside less heavily barred, the dark cross bars smaller, and somewhat granular or scale-like.

Wings of 3 ♂♂ 164.5–171 (168.0), of 2 ♀♀ 162.5. 164 mm. Benson (1947) gives wings of 13 ♂♂ as 157–168, 9 ♀♀ 158–165 mm.

Range: The arid coastal strip of Angola in Moçamedes and Benguela.

(c) *Pterocles bicinctus chobiensis* (Roberts), 1932: Kabulabula, Chobe R., Botswana.

Compared with *P.b. bicinctus* male is darker, the mantle, scapulars and tertials more cold greyish-brown and often barred with black, less plain Hair Brown or Drab, and with the apical spots larger and more chalky white in appearance. Below, often colder over the throat and upper breast, and black transverse barring coarser and on a greyer ground. Female much less sandy coloured than *P.b. bicinctus*, the dorsal feathering barred and streaked with jet black rather than brown, the black well developed over the scapulars and tertials; light interstices pale vinaceous, less sandy, and apical spots larger, purer white, and more copious. Below, with black transverse barring finer on a colder grey ground. Ranging a little larger in size. Wings of 10 ♂♂ 176–191 (183.2), of 10 ♀♀ 174–187 (180.6) mm. Roberts (1935) gives the wings of the paratypical series as 11 ♂♂ 171–188, 11 ♀♀ 169–183 mm.

Range: Northern Damaraland in the Etosha Pan area and Ovamboland, eastwards to the Caprivi Strip, Ngamiland and northern and north-eastern Botswana, and perhaps reaching seasonally to extreme western Matabeleland, Rhodesia, as material from Sentinel Ranch, near Beit Bridge, is of this form; also southern Angola and south-western Zambia.

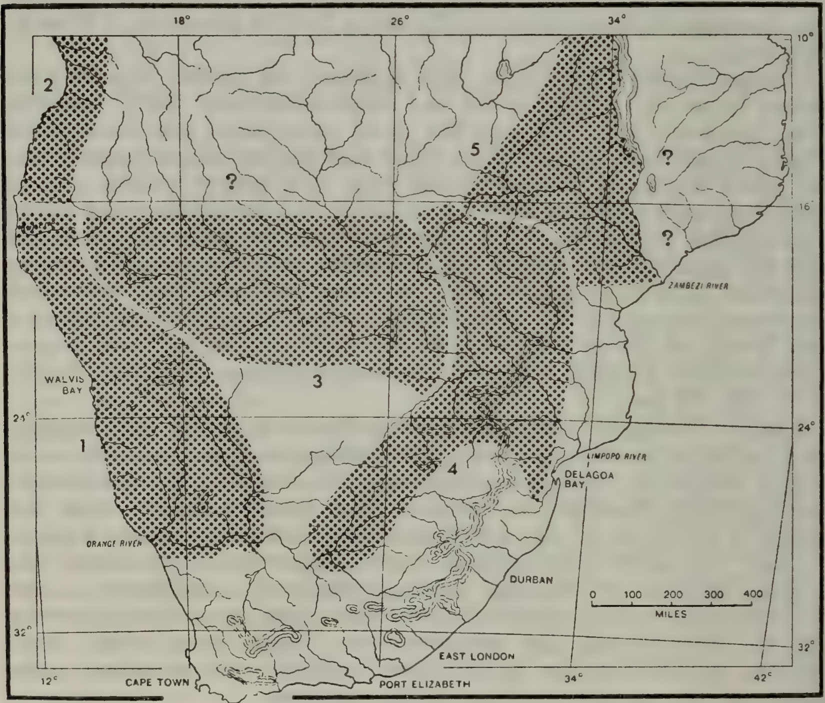
Note: An adult ♀ from Nata, north-eastern Botswana, dated 11th August, 1966, in the National Museum, Bulawayo, collection is a symmetrical partial albino, with a narrow white band across the mid-breast, and the bastard-wing and primary-coverts largely pure white. White feathers are also present in the inner primary and secondary series. Otherwise, the specimen is a typical *P.b. chobiensis*.

(b) *Pterocles bicinctus multicolor* Hartert, 1908: Rustenburg, western Transvaal.

Male differs sharply from *P.b. chobiensis* in being much more heavily transversely barred with blackish-brown above, the pale interstices deep Sayal Brown or dark cinnamon in colour, the white tipping to the mantle, scapular and tertial feathering reduced. Below, with the breast somewhat ruddier, and with the dark barring much blacker and coarser. Female more saturated and redder than *P.b. chobiensis*, the dorsal barring heavier, but the solid black areas reduced, the pale interstices redder, being cinnamon or deep vinous-cinnamon, less pale vinaceous, and with the white apical spotting and edging suppressed. Below, more rusty-buff over throat and breast, and black transverse barring heavier and deeper in colour. Size the same as *P.b. bicinctus*. Wings of 10 ♂♂ 173.5–182.5 (178.8), 10 ♀♀ 173–180 (176.3) mm.

Range: Northern Cape Province in districts of Kuruman and Kimberley, and apparently the western Orange Free State, eastern Botswana, western, northern and eastern Transvaal, Rhodesia and adjacent Moçambique. In north of range reaching to the middle Zambesi R. valley to the west of Chirundu (Benson and Irwin, in press). A specimen taken by the Carp Expedition of 1951 at Swartbooi's Drift, Cunene R., on 24th June is applicable to this race, indicating seasonal movement (see other comments above).

(e) *Pterocles bicinctus usheri* (Benson), 1947: Tambara, lower Zambesi R., Moçambique.


18°
26°
34°
10°
16°
24°
32°
2
5
?
?
?
ZAMBEZI RIVER
3
WALVIS BAY
24°
1
4
LIMPOPO RIVER
DELAGOA BAY
ORANGE RIVER
DURBAN
0 100 200 300 400
MILES
32°
EAST LONDON
12°
CAPE TOWN
PORT ELIZABETH
34°
42°

Pterocles bicinctus Temminck

The distribution of the Double-banded Sandgrouse and the ranges of its five component races.

1. *Pterocles bicinctus bicinctus* Temminck.
2. *Pterocles bicinctus ansorgei* (Benson).
3. *Pterocles bicinctus chobiensis* (Roberts).
4. *Pterocles bicinctus multicolor* Hartert.
5. *Pterocles bicinctus usheri* (Benson).

Similar in coloration to *P.b. multicolor*, but ranging smaller in size. Wings of 13 ♂♂ 161–171 (165.0), of 10 ♀♀ 157–168 (161.3) mm.

Range: Rhodesia in the Zambesi R. valley to the east of Chirundu, and Moçambique in the districts of Tete and Manica e Sofala, extending north to the Luangwa R. valley and adjacent south-eastern Zambia, and in southern Malawi in the Moçambique border country.

2 *Pterocles burchelli* Sclater

Variation in the Spotted Sandgrouse is relatively slight and was first demonstrated by Roberts (1932), when he separated *P.b. makarikari* from Nkate, north-eastern Botswana, from nominate *P. burchelli* Sclater, 1922: near Griquatown, northern Cape Province. Most recent authors have followed Roberts in admitting two races in this sandgrouse, with the exception of White (1965), who reverted to the use of a binomial. Winterbottom (1965), on the other hand, in his detailed study of this species, recognised no less than three races, namely, *P.b. burchelli*, *P.b. makarikari*, and *P.b. delabati* Winterbottom, the last proposed as a new race from the Etosha Pan region of northern South-West Africa.

In his study, Winterbottom recognised two races with somewhat circumscribed ranges (*P.b. makarikari* and *P.b. delabati*), and a third, the nominate, with a more extensive distribution. Most authors have restricted *P.b. makarikari* to the Makarikari Salt Pan and peripheral areas of north-eastern Botswana, with the exception of Macdonald (1957) and Mackworth-Praed and Grant (1962), who either placed or suggested placing the South-West African and northern Botswanan populations in *P.b. makarikari*, thereby restricting the nominate race to the south-east and east.

Until recently the material of typotypical *P.b. makarikari* available to workers consisted solely of that assembled by the Vernay-Lang Kalahari Expedition, of 1930. I have been able to examine some of this material, and find it all relatively worn and sun affected, the specimens having been obtained in mid-August. Recent specimens from Makarikari collected for the National Museum of Rhodesia later in the year (November) are in moult and largely fresh condition, and do not agree with the Vernay-Lang Expedition paratypes of *P.b. makarikari*, being fresher and more strongly coloured in appearance. The recent material corresponds more or less perfectly with Winterbottom's diagnosis of his *P.b. delabati* and with freshly moulted specimens from northern Damaraland and the Etosha region available to me. The impression formed from a careful scrutiny of the assembled specimens is that some of the pallor of the Makarikari birds is not of genetic import. Much of the paleness in the *P.b. makarikari* topotypes is very evidently induced by a harsh, glaring and desiccating environment acting in a relatively short space of time on unstable pigments. This observation is lent support by the fact that freshly moulted Makarikari specimens, as opposed to others taken in worn dress, are not subspecifically different to those from further west in northern Botswana, and in northern South-West Africa, as noted some years ago by Macdonald.

My findings support the arrangement of the populations proposed in Mackworth-Praed and Grant (1962), apart from the precise ranges to be accorded the two taxa, which require to be adjusted somewhat. As Etosha birds cannot be satisfactorily separated from those of Makarikari, the recently proposed *P.b. delabati* will, unfortunately, have to be considered a synonym of *P.b. makarikari.*

The revised characters and ranges of the two races of Spotted Sandgrouse are as follows:

(a) *Pterocles burchelli burchelli* Sclater, 1922: near Griquatown, northern Cape Province.

Adult male with the top of the head dark olive-brown, the feathers edged with Ochraceous-Buff; mantle, scapulars and tertials olive-brown, the feathers tipped with Orange-Citrine, dotted with white. Below, breast cinnamon with an ochraceous overlay, the feathers sub-apically spotted with white. Female as male above, but face, chin and upper forethroat with ground yellowish-buff; lower throat and upper breast Pinkish Cinnamon with ochraceous overlay, spotted with white; lower breast and sides buffy-white with some brown barring and dusky speckling.

Range: Northern Cape Province and South-West Africa north to the highlands of Damaraland, southern and eastern Botswana, the western Orange Free State, and western and northern Transvaal.

(b) *Pterocles burchelli makarikari* (Roberts), 1932: Nkate, northern Botswana.

(Synonym: *P.b. delabati* Winterbottom, 1964 (1965): Onguma, Etosha Pan, northern South-West Africa)

Male with edging to head-top feathers paler; mantle, scapular and tertial feathers paler, the tipping less reddish bronzy (about Old Gold), the white spotting starker; blue over head brighter and clearer. Below, breast more vinaceous, less cinnamon. Female shows same dorsal differences as male; yellowish-buff ground of head paler. Below, upper breast lighter and more vinaceous, less inclined to Tawny-Olive; lower breast and belly whiter and less strongly barred.

Range: Northern South-West Africa from Etosha Pan and southern Ovamboland, eastwards to Ngamiland and northern Botswana (in east reaching the Makarikari Salt Pan and the Nata R.). Seasonally to north-western Rhodesia (Wankie).

3 *Pterocles namaqua* (Gmelin)

Variation in the Namaqua Sandgrouse was first demonstrated by de Schauensee (1931), but this author's findings were disallowed by White (1951 and 1965). The most recent detailed revision of the species is the report by Clancey (1959), in which two races were admitted, these being *P.n. namaqua* (Gmelin), 1789: lower Orange R., north-western Cape Province, and *P.n. furva* Clancey, 1959: Van Wyks Vlei, north-central Cape Province. Recently, both Smithers (1964) and Clancey (1965) admitted as valid a third form, *P.n. ngami* de Schauensee, 1931: 25 miles N.W. of Lake Ngami, north-western Botswana, about which taxon there has been much doubt ever since it was proposed well over thirty years ago.

Subspecific variation in *P. namaqua* is best shown in the male, in which sex there is a fair degree of difference in the coloration of the upperparts and the degree to which the mantle, scapulars and tertials, and the adjacent wing-coverts, are tipped with silvery spots. Ventral coloration also varies, some populations showing developments of sepia or brownish-black over the medio-ventral plane, which is lacking in others. Variation is less well marked in females, and seems entirely confined to the colour of the upperparts, though northern birds appear to have more extensive white panels to the inner vanes of the primaries. Some of the populations, especially those breeding in the Karoo, are more truly migratory than in the other sandgrouse species considered in this study, which factor requires to be borne in mind in assessing the true nature of the subspecific variation and arranging the populations into acceptable taxa.

As the variation of *P. namaqua* was fully discussed by me in 1959, there is no need to cover the ground again, despite the fact I have recently examined a large volume of new material brought together by South African museums since then, as this new material confirms earlier findings as far as they went. However, as I am now prepared to recognise *P.n ngami*, some comments on this form seem desirable. De Schauensee separated *P.n. ngami* from what he took to be *P.n. namaqua*, but was actually *P.n. furva*, on the basis of paler coloration, and gave its range as the region of Lake Ngami. There is now known to be no resident population of the Namaqua Sandgrouse in the region of Lake Ngami, nor, apparently, in either the Mababe Depression or at the Makarikari Salt Lake, according to Mr. M. P. S. Irwin *in litt.* Populations to which I attach the name *P.n. ngami* breed in northern South-West Africa from the Kaokoveld and the Etosha Pan region, eastwards to Ghanzi and the northern edge of the Kalahari, in north-western Botswana, and are apparently only seasonal visitors further east. The south-western Angolan population is also presumably referable to this taxon, but unfortunately I have not been able to examine any specimens in order to verify this.

In the populations now attributed to *P.n. ngami*, males are not actually paler than in *P.n. namaqua*, but duller and colder above, less yellowish or sandy, and the hind and side surfaces of the neck are rather greener. Below they show better characters, being darker rusty Clay Color over the chin and upper fore-throat, and have a slightly darker, more vinaceous, less sandy, upper breast, and under the white and chocolate brown breast cincture they are heavily overlaid with Vinaceous-Gray in fresh condition, as against almost clear Sayal Brown in *P.n. namaqua.* The brown lower portion of the double breast cincture is darker. Abrasion through contact with gravels and soils results in a loss of much of the characteristic greyness of this race in worn dress. Females show no constant differences, though one or two Namib coast females are very pale and whitish mottled over the wings.

P.n. ngami is subject to some post-breeding dispersal, probably due to the drying up of watering points on the breeding grounds, which lie largely in regions distantly removed from streams of any kind, in the dry winter months. Specimens attributable to this form have been examined by me from localities to the east and south of the breeding range. According to Smithers, the Ghanzi population of *P.n. ngami* breeds in the early part of the dry season (during April and May), whereas in the Karoo at the other end of the species' distribution, *P.n. furva* is a summer breeder from September–January.

Three races of *P. namaqua* require to be admitted, the characters and ranges of which are as set out below:

(a) *Pterocles namaqua namaqua* (Gmelin), 1789: lower Orange R., north-western Cape Province.

Male with top of head Buffy Olive, the hind and side surfaces of the neck Olive Lake; lower mantle, scapulars and tertials Brownish Olive, the feathers with the apical third Chamois, the apex with a metallic silvery blue spot, this surrounded with dark brown. Below, chin and upper fore-throat Antimony Yellow; upper breast Avellaneous, bordered posteriorly by a double band of white and Auburn; remainder of breast and lateral surfaces Sayal Brown, the medio-ventral plane with slight dusky tipping or overlay. Female with ground to hind and side surfaces of neck Chamois; head-top, mantle, scapulars and tertials deep Tawny-Olive with wavy cross-bars and shaftstreaks of blackish-brown, and the long scapulars and tertials with buff apical spots.

Range: Arid western coastal strip of the Cape Province north from the Berg R., and the north-western Cape in Bushmanland, Kenhardt and Brandvlei districts, to South-West Africa (north to the highlands of Damaraland and the southern Kaokoveld), the northern Cape, southern Botswana, dry western Orange Free State (Modder R.), and the western Transvaal. Apparently largely resident within these limits.

(b) *Pterocles namaqua furva* Clancey, 1959: 10 miles N.E. of Van Wyks Vlei, north-central Cape Province.

Male differs from last in being darker and more saturated above, and strongly ochraceous tinged in newly moulted condition, the silvery blue spotting more profuse. Below, with the chin and upper fore-throat rustier (about Clay Color); upper breast darker (Drab as against Avellaneous); lower portion of double breast band darker; lower breast and medio-ventral surface dark greyish Vinaceous-Brown rather than Sayal Brown, the middle of the lower breast and abdomen quite blackish. Female more strongly coloured over the yellowish head surfaces, and dorsal surfaces of body and wings redder and more saturated. Below, the transverse barring to the lower breast and adjacent surfaces tends to be coarser, and the pale interstices are more yellowish, less white.

Range: Winter rainfall region of the south-western Cape and the Karoo districts, east to the eastern Cape (locally north-east to Griqualand East), the Orange Free State (except extreme west), the lowlands of Lesotho, Upper Natal (irregular, but has bred), and the southern Transvaal highveld (north to Pretoria). Many populations are migratory, wintering (from about March) north and north-east of the breeding range (specimens examined from South-West Africa, the northern Cape, and Botswana [Gemsbok Pan]).

(c) *Pterocles namaqua ngami* de Schauensee, 1931: 25 miles N.W. of Lake Ngami, north-western Botswana.

Male not quite so dark and richly coloured above as *P.n. furva*, but duller and darker and more greenish, less yellow, over the neck than *P.n. namaqua*. Chin and upper fore-throat rusty as in *P.n. furva*, and upper breast Drab as in that race; lower breast and medio-ventral surface completely overlaid with pale Vinaceous-Gray in freshly moulted condition, as against Sayal Brown in *P.n. namaqua* and dark vinaceous-brown in *P.n. furva*, and also without the heavy black abdominal overlay of the latter. Female as in *P.n. namaqua*, but perhaps ranging paler, the wings often more spangled with white over the coverts and tertials, and the white linings and tipping to the primaries broader and without the dusky graining of southern birds (as noted in northern Namib specimens).

Range: Northern South-West Africa from the Kaokoveld and Etosha Pan region, east to Ghanzi and the northern edge of the Kalahari, in Botswana. The south-western Angola population also probably belongs here. Occurs east and south of the breeding range in the off season, having been collected near Lake Ngami, in the Mababe Depression, at the Makarikari Salt Pan, in the Gemsbok National Park, and elsewhere.

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Notes on some African species of *Serinus*

by C. M. N. WHITE

Received 4th February, 1967

The following notes are intended to supplement and amend the account of the genus *Serinus* as published in my *Check List* of 1963.

Serinus flaviventris (Swainson)

The populations which I included under the nominate form must be divided into three subspecies:—

S. f. flaviventris (Swainson)

Upper side dull and dark; under side comparatively pale yellow with olive sides of breast extending across breast as a band. South-west Cape Province from Olifants river to Cape Peninsula and Bredasdorp.

S. f. hesperus Winterbottom (1963, Bull. B.O.C. 83, p. 138. Port Nolloth).

Differs from nominate in lack of the breast band and in much yellower upper tail-coverts contrasting with back. Western coast of Cape Province from Orange river mouth to Olifants river.

S. f. quintoni Winterbottom

Under side richer golden yellow than *hesperus* which it resembles in lack of breast band; upper side with brighter olive more in contrast with dark feather centres than the foregoing two. This occurs in the balance of the range which I had ascribed to the nominate form.

Serinus scotops (Sundevall)

The nominate form of my *Check List* must be subdivided by recognising *S. s. umbrosus* Clancey, 1964, Durban Mus. Nov. 7, p. 184. Caledon. It is duller green above than the nominate form and darker below with heavier black streaking. South-west Cape Province from Caledon to Knysna and Plettenberg Bay.

I am indebted to Professor Winterbottom for the facilities to examine material of these species.

A spotted breast band in *Apalis rufifrons*

by Melvin A. Traylor

Received 19th May, 1967

In 1922 van Someren (*Novit. Zool.*, 29: 219) wrote that in the southern race of *Apalis rufifrons*, *rufidorsalis*, "Full plumaged males have a series of black spots on the upper breast forming a broken collar. In females this is almost absent." Since van Someren's statement, no other author has reported any specimen with a similar band, and Mackworth-Praed and Grant (1955, *Bds. E. and N. E. Afr*: 417) fail to mention it in their description of the species.

In the Field Museum there are three specimens that show this collar, two males from Lake Magadi, Kenya, and Mkomasi, Tanzania, respectively, and a female from Maungu, Kenya, the specimen that was mentioned by van Someren. In the males the band appears as a rather dense line of partially obscured dark spots, about three millimetres wide, crossing the breast just below the throat. In the female the band is barely suggested by a few spots. However, the apparent faintness of the band in the female is not due to the sparsity of spotting but to the long white fringes on the feathers which obscure the dark markings. Each of the spotted breast feathers actually has two spots, separated by the white shaft (see fig.). Bordering the whole feather is an edging of white, much broader in the female than in the male. It is this broad edging which obscures the spotting of the underlying feathers and makes the band less evident. Presumably in both sexes the band becomes more evident with wear.

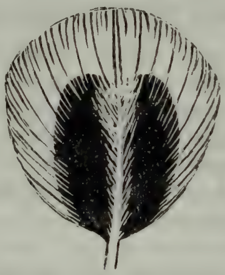

Figure. Breast feather of female *Apalis rufifrons rufidorsalis* showing the double black spots and the broad white terminal fringe. In the male the white fringe is narrower so that the spotting is more apparent.

So far all specimens exhibiting a breast band belong to the southern race *rufidorsalis*, and all specimens of *rufifrons* and *smithi* are immaculate creamy white below. The extent to which the band is characteristic of *rifidorsalis* is difficult to say. A second male from Magadi and one from Tsavo have a few spotted feathers on the sides of the breast, but these are not evident until the feathers are lifted and their bases examined. Two males from Tsavo and Campi-ya-bibi and two females from Magadi and Mkomasi show no trace of spotting. However, those birds with well developed breast bands have the bill wholly black, while those with little or no marking have the base or more of the mandible horn coloured. It may be, as van Someren suggested, that only fully adult birds, two years or more old, develop the band.

NAT. HIST.
1967

CONTRIBUTORS

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Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for ''Description'', ''Distribution'', ''Type'', ''Measurements of Type'', ''Material examined'' and further sub-headings as required.

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DINNERS AND MEETINGS FOR 1967

31st October (jointly with B.O.U.), 27th November, 19th December.

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The six hundred and forty-fourth meeting of the Club was held at the Rembrandt Hotel, London, on the 19th September, 1967.

Chairman: Mr. R. S. R. Fitter

Members present: 20; Guests 9.

Drs. Pamela and Jeffrey Harrison addressed the meeting on

The Camargue 1967

Drs. Jeffery and Pamela Harrison showed colour slides taken on their latest visit to the Camargue in April, 1967, when they camped at the Station Biologique de la Tour du Valat, thanks to the kindness of Dr. Luc Hoffman.

Compared with their previous visit ten years ago, it was gratifying to learn that there had been little major change in the habitat, other than a good deal more of the area becoming enclosed as a protection against the greatly increased summer tourism. "Salicam" the salt producing company had also converted a lot more *étangs* into *salins*. Here the increasing salinity had killed off a certain amount of vegetation, particularly *salicornia*, but good conditions had resulted for wading birds and for the flamingos. The company had also taken special care to preserve nesting islands.

Unfortunately, the flamingos have not nested since 1961, in spite of their traditional nesting island, which had become somewhat eroded, being restored in 1964 through a World Wildlife Grant. Reasons for their failure included excessive distrubance from low flying aircraft and bad weather. Dr. Hoffman has shown however from young ringed in 1961, that the Camargue and Spanish populations are really one, and in Spain breeding is more regular and the "best breeders" probably go there.

The area of rice paddies had not increased appreciably and in any case, when flooding they provide good feeding for migrant waders, marsh terns and herons and when being drained, help to counter the dying out of the lower *étangs* in late summer.

The number of hawks seen was gratifying and pictures were also shown of a hybrid purple x grey heron found feeding near Les Saintes Maries de la Mer, details of which will shortly be submitted to this *Bulletin*.

5 OCT 1967
PURCHASE

The damage done by yellow-legged herring gull predation, which had increased very seriously, particularly to Avocets, was discussed. Peter Olney wondered how much of the decrease in Avocets was also due to changes in the salinity in areas affected by the crystallisation process.

The South African races of the hemipode *Turnix sylvatica* (Desfontaines)

by P. A. Clancey

Received 7th March, 1967

Since its description nearly thirty years ago, *Turnix sylvatica arenaria* Stresemann, 1938: plateau of Erongo Mts., north-western South-West Africa, has been discussed only once, by Macdonald (1957), and has only been accepted as valid by Hoesch and Niethammer (1940) and Winterbottom (1964). Ten years before Stresemann named *T.s. arenaria*, Roberts (1928) drew attention to the pale nature of South-West African specimens.

In my recent *Catalogue of Birds of the South African Sub-Region* (Clancey 1965), I queried *T.s. arenaria* and placed it in the synonymy of *T.l. lepurana* (Smith), 1836: western Transvaal, on the basis that birds exactly like those of northern South-West Africa occurred in eastern Botswana (Bechuanaland), western Rhodesia, and even the Transvaal. In the light of Winterbottom's recent comments on the discreteness of *T.s. arenaria*, I have gone fully into the matter of variation in the southern and central African populations of this hemipode, using the pooled specimen resources of all the major southern African museums. The material finally brought together, some one hundred and forty-one specimens, shows that two races of *T. sylvatica* require to be recognised in zoogeographical South Africa, and that *T.s. arenaria* is valid, as claimed by Winterbottom. In so far as this race is concerned, it is now found to have an extensive breeding range from South-West Africa, east certainly to north-eastern Botswana, occurring seasonally east of this between May and early December, when it ranges to the Transvaal, Rhodesia, and Zambia. *T.s. lepurana* is likewise subject to post-breeding movement, as revealed by the occurrence of specimens of this race from localities in South-West Africa which lie within the established breeding range of the paler *T.s. arenaria.*

Ortygis lepurana A. Smith, 1836, was described from specimens collected in the western Transvaal to the north of Kurrichaine=Zeerust, in which general area *T.s. arenaria* occurs seasonally, but the name is incontrovertibly applicable to the eastern assemblage of populations, though from information given by Smith in his *Illustrations of the Zoology of South Africa*, Aves, pl. xvi, 1838, and text, it is clear that the paratypical material also contained examples of *T.s. arenaria*. The female figure on the stated plate is a fairly accurate representation of the pale *arenaria*, while the male figure is of *lepurana*. However, Smith's reference in the original description to the back feathers being edged with greyish is diagnostic of *lepurana* as interpreted here, the edgings being creamy or buffy-white in *arenaria*.

The characters and ranges of the two races of *T. sylvatica* occurring in the South African Sub-Region are as follows:

(a) *Turnix sylvatica lepurana* (Smith)

Ortygis Lepurana A. Smith, *Rep. Exped. Expl. Centr. Afr.*, 1836, p. 55: country north of Kurrichaine=western Transvaal.

♀. Frons, lateral coronal surfaces, side of neck and face creamy-white, heavily scaled with black; upper mantle about Hazel (Ridgway [1912], pl. xiv), the feathers edged with Grayish Olive (pl. xlvi); lower mantle, scapulars and tertials Hazel, margined with Grayish Olive and crossbarred with brownish-black. Below, lower throat and upper and midbreast saturated Clay Color (pl. xxix), this diffused downwards over the flanks; sides of lower neck and breast creamy-white, the feathers with round sub-apical spots of black. ♂ smaller than ♀. Upperparts somewhat darker and duller, showing less hazel or vinaceous-brown, and with the blackish-brown crossbarring extending over the entire mantle, and with the mantle, scapular and tertial feathers usually narrowly edged on both vanes with creamy-white. Below, with paler and less extensive rusty over the lower throat and breast (about Cinnamon-Buff [pl. xxix] in most).

Wings of 10 ♂♂ 83–90 (86.4), of 10 ♀♀ 76.5–82.5 (79.8) mm.

Material examined: 86. Eastern Cape Province, 7; Natal and Zululand, 5; Mozambique, 1; Transvaal, 10; Orange Free State, 1; Rhodesia, 21; Malawi, 20; Zambia, 15 (a ♀ from Chadiza at 14° 05′ S., 32° 25′ E. has deep rusty flanks); Botswana, 3 (Tamafupi [15 May]; Tsepe (16 Jan.); Ramutsamusa Plain (4 Feb.); South-West Africa, 3 Mariental (22 May); "Quickborn", Okahandja (11 May); Namutoni (8 Aug.).

Range: South-West Africa in Great Namaqualand (the ♀ from Mariental was with egg) and Damaraland highlands, northern and eastern Cape, Natal and Zululand, Moçambique, Swaziland, Orange Free State, eastern Botswana, Transvaal, and Rhodesia, to northern P.E.A. Malawi, Zambia, and Angola. Material at present available has not enabled me to define the range accurately north of these limits. *T.s. lepurana* is usually credited with a range which extends throughout much of Ethiopian Africa outside the limits of unbroken forest, and southwestern Arabia.

Sclater (1924) recognised *T.s. alleni* Mearns, 1911: N'Guaso Nyiro R., Kenya, as a race extending from West Africa, east to Uganda and Mt. Kenya, but various workers have pronounced *T.s. alleni* as inseparable from *T.s. lepurana*.

Remarks: In South-West Africa, Hoesch and Niethammer (1940) record this race from Kayas, near Etosha, on 18 and 21 July.

(b) *Turnix sylvatica arenaria* Stresemann

Turnix sylvatica arenaria Stresemann, *Ornith. Monatsber.*, vol. xlvi, 1938, p. 26: plateau of Erongo Mts., north-western South-West Africa.

♀. Frons, lateral coronal surfaces, sides of neck and face less heavily scaled with black than last race; medial coronal streak broader and whiter; rest of upperparts wholly paler, the upper mantle about Tawny (pl. xv), the feathers edged pale greyish-buff; remainder of mantle, scapulars, tertials, rump and upper tail-coverts somewhat yellower or more sandy, less vinaceous, the feathers being about Tawny-Olive (pl. xxix), variably transversely barred with blackish-brown and edged on both vanes with creamy or buffy-white, imparting a streaked effect. On underside, with slightly paler rusty over the lower throat and breast, and with the lateral neck and breast spotting finer, the individual spots more sagittate, less rounded. In the wings, the coverts have the black sub-apical speckling less extensive, with a corresponding increase in the extent of the off-white margining. ♂ subspecific differences slightly better marked than in ♀. Medial coronal streak broader and whiter than in *T.s. lepurana:* rest of upperparts paler and yellower (Tawny-Olive), the cross-barring heavier and somewhat blacker, but pale edging to both vanes broader, resulting in a more strongly streaked and cryptically marked dorsal facies. Face whiter. Below, with paler rusty over breast, and spotting to sides of neck and breast finer. With reduced blackish speckling to coverts, and pale edging of same more extensive.

Wings of 10 ♂♂ 85–91 (87.4), of 10 ♀♀ 75–81.5 (78.8) mm.

Material examined: 55. South-West Africa, 11 (Windhoek, Okahandja, Sesfontein, Etosha, Grootfontein); Botswana, 17 (Kai-Kai and district, Lake Ngami, Makarikari, Nata); northern Cape, 1 (Kuruman); Transvaal, 4 Hector Spruit (21 July), Leydsdorp (22 July), Marabastad (3 Dec.), Pienaar's River (10 Sept.); Lesotho, 1 (Mamathe's [21 Nov.]); Rhodesia, 17 (Bulawayo [7 July–16 Oct.], Nyamandhlovu (15 June), Goromonzi (23 Aug.), Dorset Siding (14 Aug.), Nyahuvu, Headlands (7 July–19 Oct.), Salisbury (14 Nov.), Chiawa (19 June), Que Que (Oct.); Zambia, 4. Choma (30 July), Lochinvar (17 July), Makulu (12 Aug.), Chasefu, Lundazi (May).

Range: Namib edge of western Damaraland and northern South-West Africa in northern Damaraland, the Kaokoveld, and Ovamboland, east to the Lake Ngami region, the Kalahari, and north-eastern Botswana in the Makarikari Salt Lake and Nata R. sectors. Also presumably in arid south-western and parts of southern Angola. Ranges east and south of the breeding range during the cold dry months, mainly between May and early December, then reaching the Transvaal, Rhodesia, and Zambia; probably elsewhere.

Remarks: Hoesch and Niethammer (1940) list *T.s. arenaria* from the Erongo Mts., Karibib, Ombujomatemba, and Rietfontein, in South-West Africa. The specimens listed by Winterbottom (1964) were made available for this research.

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For the loan of material I am very grateful to the following persons and institutions: South African Museum, Cape Town (Professor J. M. Winterbottom), East London Museum (Mr. C. D. Quickelberge), Transvaal Museum, Pretoria (Mr. O. P. M. Prozesky), State Museum, Windhoek (Mr. P. J. Buys), and the National Museum, Bulawayo (Mr. M. P. S. Irwin).

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ADDENDUM

Through the kindness of Major Melvin A. Traylor, Associate Curator of Birds, Field Museum of Natural History, Chicago, I have been able to examine a further forty-one specimens of *T. sylvatica* from Africa, the specimens being mainly from Angola, Zambia, the Kasai, Congo, Tanzania, Kenya and Uganda. These specimens show that birds indistinguishable from *T. s. lepurana* range more or less throughout Ethiopian Africa, and *T. s. alleni* Mearns is without doubt a synonym. A single bird from Huila, in southern Angola, dated 6th November, 1954, is attributable to *T. s. arenaria*, showing that this race does in fact range into southern Angola as surmised. A second example from the Luachi R., in western Zambia, taken on 9th November, 1961, is also *T. s. arenaria*, which has already been recorded in the main paper on the southern African races of this hemipode as extending seasonally into Zambia.

A singleton from Isiolo, N.F.D., Kenya, is very like *T. s. arenaria* and probably represents a pale xeric form analogous in its main characters to the southern desertic race, which ranges throughout the Somali Arid District, the south-western Arabian peninsula, and, perhaps, the whole of the arid savanna belt lying immediately to the south of the Sahara. Mearns apparently confused similar pale birds to the Isiolo specimen with *T. s. lepurana* when naming *T. s. alleni.*

Seafowl observed on a voyage, Capetown to London, 23rd January to 8th February 1967

by CHARLES R. S. PITMAN

Received 23rd March, 1967

GENERAL. The day to day details of this voyage, which provided an interesting comparison with the observations (*Bull. B.O.C.* 87 (3), March, 1967) made on this route in the reverse direction—London to Capetown—26th April to 12th May, 1966, are with the Royal Naval Bird Watching Society. Las Palmas, Gran Canaria, was the sole port of call. It was not the season for land migrants and the only land birds which came aboard were two Blackbirds, *Turdus merula* which were flying about the ship for about an hour (0800-0900 hrs.) on 7th February, when approaching and off the Isle of Wight.

Seafowl to a great extent were absent throughout the voyage with the exception of the day—and especially the evening—after leaving Capetown, when (some 370 miles north of Capetown) there was a steady southerly drift of two species of shearwaters and two species of petrels presumably to their southern or Antarctic breeding grounds; the day before (31st January), passing Dakar when Cory's (or Mediterranean) Shearwaters moving north and skuas were active in the p.m.; the day Dakar was passed (1st February) when three species of skua followed; and the following day (2nd February) briefly in the late evening when Little (or Dusky) Shearwaters were active. A few hundred gulls of three species were noisily attendant as our ship awaited entry into Las Palmas harbour. Gulls which followed after Las Palmas, though seasonal, are regarded as commonplace. Observations were rarely made between 1400 and 1630 hours:

seafowl are active in the early morning, up to about 0900 or 1000, but more so in the evening from about 1630 to dusk.

Blank days without seafowl were:—26th January (18° 46′ S.: 05° 30′ E.); 28th January (07° 29′ S.: 03° 24′ W.), 29th January (01° 46′ S.: 07° 32′ W.), 30th January (03° 50′ N.′ 11° 51′ W.) and 5th February (39° 54′ N.′ 10° 52′ W.), when approaching Bay of Biscay.

Almost blank days were:—27th January (13° 05′ S.: 01° 00′ E.) one Madeiran Petrel and 4th February (33° 28′ N.: 13° 20′ W.), two Herring Gulls.

Out of 15 days five were blank and two almost blank.

Unless otherwise stated the ship's recorded position is at noon.

CAPETOWN HARBOUR. Initially, Capetown harbour from 1100 on 22nd January till dusk on 23rd January provided some items of interest.

CAPE CORMORANT, *Phalacrocorax capensis.* A few only in the harbour, active in p.m., from about 1630 onwards.

BLACK-BACKED GULL, *Larus dominicanus.* Plenty, mainly adult, but a few immature. Pleasant to hear occasional "mewing" instead of the more usual raucous cries.

HARTLAUB'S GULL, *Larus hartlaubii.* Abundant, and dozens to hundreds variously feeding in the harbour; some in constant flight near ship, looking for scraps up to 2200 hrs., when observations ceased (dark *c.* 2030). Mainly adult though some immature. About 1030 on 23rd January massed thousands, presumably fishing, observed distantly outside main breakwater.

DAMARA TERN, *Sterna balaenarum.* All in non-breeding plumage. Only one observed on 22nd January, in p.m., actively fishing from about 1630 onwards: it was attracted to refuse from vessels at dockside on which small fish were feeding. On 23rd January several active between 1630 and 1900 hrs., one caught five fish in seven dives: and a few also fishing between 1400 and 1630. In the late afternoon one of these terns accompanied a feeding Cape Cormorant, whose underwater movements it could closely follow while hovering above and frequently caught fish disturbed by the diver: in fact more than once this tern's final plunge coincided with the surfacing cormorant. Later another and extremely noisy tern arrived also to accompany the cormorant.

The list which follows is in the order in which the birds were seen first.

WANDERING ALBATROSS, *Diomedea exulans.* On 24th January, the day after leaving Capetown (at 1915 on 23rd January), two subadult, which were readily distinguishable, were with us all day. About 0930 one settled in wake to investigate the ship's refuse which was also being examined by a Cape Hen and the other flew off south westerly at 1045 and did not return till 1330. A third subadult joined the other two at 1700 but soon disappeared. None remained after 1730. On 25th January one of the previous day's birds followed for a couple of hours onwards from 1040 and then disappeared; it settled on the water at 1215 but was airborne again a quarter of an hour later.

CAPE HEN, *Procellaria aequinoctialis.* At 0900 on 24th January about six following and settling in wake to examine refuse. Soon after 1030 one only observed and by 1035 this too had disappeared.

BLACK-BROWED ALBATROSS, *Diomedea melanophris*. At 1040 on 24th January two adult and one subadult passed close flying southerly.

WHALE BIRD, *Pachyptila* sp. Between 0900 and 0930 on 24th January about six seen distantly following and flying over wake.

GREAT GREY SHEARWATER, *Adamastor cinereus*. On 24th January, between 1650 and 1735, a total of at least ten moving southerly, some very close.

GREAT SHEARWATER, *Puffinus gravis*. Between 1650 and 1735 on 24th January a total of at least six moving southerly, a few very close.

SILVER-GREY FULMAR, *Fulmarus glacialoides*. At 1710 on 24th January one passed very close flying northerly.

SCHLEGEL'S PETREL, *Pterodroma incerta*. Between 1715 and 1820 on 24th January a total of five very close moving southerly.

GREAT-WINGED PETREL, *Pterodroma macroptera*. On 24th January between 1745 and 1820 a total of four all very close moving southerly.

SOOTY TERN, *Sterna fuscata*. On 24th January at 1840 one flew across ship about foremast high.

ANTARCTIC SKUA, *Catharacta skua antarctica*. I had expected to see these "Robber" gulls either in a.m. or evening of 24th January, but none appeared.

WILSON'S PETREL, *Oceanites oceanicus*. On 25th January (24° 30′ S.: 10° 09′ E.), between 0815 and 0900 three were following, but only one seen at 1110: at 1215 six were following, but none seen again.

PETREL sp., perhaps MADEIRAN PETREL, *Oceanodroma castro*. On 27th January (13° 05′ S.: 01° 00′ E.) at 1407 one flying north-westerly faster than ship: black, with white rump.

CORY'S (OR MEDITERRANEAN) SHEARWATER, *Calonectris diomedea borealis*. On 31st January (09° 19′ N.: 16° 05′ W.), from 1415 to 1745 a total of at least two dozen observed slowly moving northerly, presumed adult (none seen when outward bound at beginning of May). Moderate sea, with fresh head wind. Large birds, flapping slowly and gliding, sometimes high above the water; moving about same rate, perhaps slightly slower than ship. Some very close.

GREAT SKUA, *Catharacta skua skua*. On 31st January one followed briefly between 1500 to 1507 then settled in the wake to investigate refuse and was not seen again. Next day, 1st February (passing Dakar at 0920), one following at 0815 and a different bird following briefly at 0900.

POMARINE SKUA, *Stercorarius pomarinus*. On 31st January one flying intermittently around ship from 1715 to 1810, when observations ceased. On 1st February when off Dakar one intermittently circling ship from 0920 to 0930 and observed closely.

ARCTIC SKUA, *Stercorarius parasiticus*. At 0930 on 1st February one following for a short while and accompanying a Pomarine Skua, compared with which it was markedly smaller (doubtfully it might have been an immature LONG-TAILED SKUA, *Stercorarius longicaudus*).

DUSKY (OR LITTLE) SHEARWATER, *Puffinus assimilis*. On 2nd February (precise locality approx. 23° 30′ N.: 17° 40′ W.), a total of ten seen between 1750 and 1756, presumed adult and mostly very close;

moving as fast as ship but no definite direction; flapping flight with little gliding (none seen outward bound at beginning of May).

LESSER BLACK-BACKED GULL, *Larus fuscus*. On 3rd February arrived Las Palmas at noon: by 0900 some two dozen following and intermittently settling in wake to feed on refuse: numbers gradually building up to well over 150 at 1105 when awaiting entry into port—a noisy flock squabbling over refuse with Yellow-legged Herring Gulls and Black-headed Gulls. Mainly adult, with a small proportion of 1966 juveniles and some others to be adult in 1967. Not many in the harbour. Up to four dozen followed after leaving port at 1600 hours and some still following at dusk (1900 hours).

BLACK-HEADED GULL, *Larus ridibundus*. On 3rd February at least three dozen feeding astern with two other gull species while waiting to enter port; a few in the harbour. All in winter plumage; mainly juveniles. None followed out of port.

YELLOW-LEGGED HERRING GULL, *Larus cachinnans*. On 3rd February at least two dozen closely either when in Las Palmas harbour or waiting to enter. The least common of the three gulls seen; mainly adult, with a few 1966 juveniles. None followed.

HERRING GULL, *Larus argentatus*. None identified at Las Palmas. On 4th February (noon latitude approx. that of Madeira) none up to 1400 hrs., but when observations resumed at 1630 one adult and very dark plumaged 1966 juvenile following for about an hour towards dusk; juvenile seemed to tire easily and eventually settled on water and disappeared, the adult remaining till nearly dusk. On 6th February (45° 58′ N.: 07° 25′ W.), three to four dozen following all day (first observation at 0830), all adult; at noon halfway across Bay of Biscay, by 1730 only about one dozen left. On 7th February, in English Channel, at least two dozen following at 0830 calling loudly and "mewing", all adult; by 0900 off Isle of Wight had increased to over four dozen including a few immature; at 1350 over a dozen, but all had left by dusk.

Further breeding records from Zambia (No. 6)

by R. K. Brooke

Received 28th April, 1967

The earlier papers in this series have been written by C. W. Benson and C. R. S. Pitman (see reference in Benson and Pitman 1966). F. J. Ashton of Ndola has recently submitted a large number of nest record cards: of these the following are of outstanding interest for the reasons indicated under each heading. I am obliged to C. W. Benson for criticizing a draft of this paper.

Butorides rufiventris (Sundevall) Rufous-bellied Heron

A colony of some 80–90 nests containing eggs was found in a reed bed in standing water on 19th March 1964. This was on a farm some 12 miles from Broken Hill, an area from which this species has not previously been recorded breeding (Uys and Clutton-Brock 1966).

Turtur afer (L.) Blue-spotted Wood-dove

C/2 14ft. up in an Avocado tree in a farm garden near Ndola on 14th November 1963. This is the second record for Zambia (Benson and White 1957).

Agapornis lilianae nigrigenis Sclater — Black-cheeked Lovebird

C/3 from a hole 25ft. up in a dead Mopane tree near Katombora on 14th November 1963. All previous records (Benson and White 1957) have been of the feral population of the nominate race at Lundazi.

In J. C. Carlisle's egg register in the Queen Victoria Museum, Salisbury, there is a note of three clutches received from F. E. O. Mors. The details are: 15th December 1917 C/4 fresh near Sesheke, Zambia; 6th April 1918 C/3 fresh Victoria Falls, Southern Rhodesia as it then was; 10th September 1918 C/2 fresh Crocodile Drift (unknown locality). The first of these clutches is now in Salisbury and measures 21.1 x 15.0, 20.9 x 15.6, 20.3 x 16.4, 19.4 x 15.8 mm. In Salisbury there is also a C/6 laid by a Salisbury aviary bird in which the eggs are substantially larger: 24.8 x 17.1, 24.4 x 17.3, 24.0 x 17.9, 22.8 x 17.9, 22.8 x 16.2, 22.3 x 17.2 mm. I am obliged to H. W. James, the Hon. Oologist at the Queen Victoria Museum, for the measurements of the eggs in his care. The Black-cheeked Lovebird has recently been visually recorded on the Rhodesian side of the Victoria Falls (Jensen 1966) which gives support to the 1918 record which otherwise might seem doubtful. Benson and Irwin (in press) have discussed the distribution of the Black-cheeked Lovebird and shown that it does not and is not likely to occur at Sesheke. The Sesheke record probably means Sesheke district *i.e.* the eastern half. The subspecies is apparently one which fluctuates in numbers and range.

McLachlan and Liversidge (1957) mention eggs of this species in the Transvaal Museum. However, I am advised (*in litt.* by O. P. M. Prozesky, the Ornithologist there, that the eggs concerned were taken on 12th October 1918 near Windhoek, South West Africa, right outside the range of the Black-cheeked Lovebird and well within the range of *A. roseicollis* the Rosy-faced Lovebird to which the eggs must be attributed.

It would appear that the breeding season of the Black-cheeked Lovebird is at least September to April and that up to six eggs may be laid in a clutch.

Thamnolaea cinnamomeiventris (Lafresnaye) — Mocking Chat

C/3 in a crevice between two slabs of rock on a cliff face at Bwana Mkubwa, Ndola, on 15th November 1964. This is the second record for Zambia (Benson 1956).

Passer domesticus (L.) — House Sparrow

In the railway yard at Livingstone two nests containing C/3 and C/4 were found on 14th January 1966 under eaves of buildings. The House Sparrow has not previously been recorded breeding in Zambia (Harwin and Irwin 1966).

Quelea quelea (L.) — Red-billed Quelea

A small colony was found in a thorn tree on the edge of the Itawa swamp in the upper Kafue drainage at *c.* 4,000 ft. a.s.l. on 14th February 1961. Some nests contained eggs and others young. All previous colonies of the Red-billed Quelea have been found in the Zambezi and Luangwa valleys (Stewart 1959) below 2,000 ft. a.s.l.

Euplectes afer (Gmelin) — Golden Bishop

Nests were found on the edge of a dambo on Teesdale Farm, Ndola, on 12th February 1960 and 19th February 1962 (both C/2 *i.e.* incomplete clutches). There are no previous records of nests found in Zambia. The species has not been recorded in this area (Benson and Irwin in press) but it is much subject to irruptions during which breeding or attempted breeding may take place outside the normal range of the species.

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Partial albinism in the Chestnut-collared Swift in Trinidad

by Charles T. Collins

Received 19th May, 1967

The occurrence of albinism has been documented for a wide variety of avian taxa. Within the Apodidae, partial albinism has been recorded for some species of swifts in the genera *Apus*, *Chaetura*, and *Cypseloides* (Sage, 1963; Gross, 1965; Eisenmann and Lehmann, 1962). During the course of several years field work on swifts in Trinidad, West Indies, I have noticed several cases of partial albinism in the Short-tailed Swift, *Chaetura brachyura*, and the Chestnut-collared Swift, *Cypseloides rutilus*. In three cases involving the latter species the birds were banded, released, and recaptured at later dates. It is the observations of the same birds, made over several years, which seem noteworthy.

The three birds involved, all adult females, were captured at a night roost in a rocky gorge along the Arima River near the head of Arima Valley, Trinidad. In each case the birds were weighed and examined in detail for any signs of moult. This information was gathered as part of a wider study of the biology of swifts in Trinidad (Collins, MS.) and was supported by research grants from the Frank M. Chapman Memorial Fund of the American Museum of Natural History.

In the first case, a bird (No. 67–39243) was captured and banded on 23rd October 1964. On that date it had seven white feathers near the vent and scattered among the under tail-coverts, three or four more on the rump, one on each side of the forehead near the base of the mandible, and one lone feather just in front of the right eye. This bird was recaptured on 28th November 1966 and 26th April 1967. On both of these occasions the white feather in front of the eye was not present while on the other hand there was an increase in the number of white feathers on the rump and underparts, and six to eight additional white feathers on the flanks. The pattern of occurrence of these albinistic feathers was not symmetrical.

The second case also involved a bird which was captured and banded on

23rd October 1964 (No. 67–39246). It was subsequently recaptured on 25th October and 28th November 1966. On all three of these occasions detailed notes were taken on its plumage and no albinistic feathers were observed. It was again recaptured on 26th April 1967 at which time it had 1–2 white feathers in front of each eye and a single white feather near the right ear.

In the third case, a single white feather was noted on the upper breast of a bird recaptured on 25th October 1966 which had not been present when this bird (No. 67–39254) was first captured and banded on 6th November 1964.

Although a nearly complete albino of a species of *Chaetura* was recently observed in Trinidad by R. P. ffrench (pers. comm.), partial albinism in swifts seems generally to involve only a few scattered feathers. Spontaneous occurrences of albinism and increases in the amount of albinism with increasing age, such as noted here, have both been previously reported for several species of passerine birds particularly among the Turdinae. Although the causes of such partial albinism are still incompletely known, it does not seem likely, in the cases reported here, that it was due to injury or disease as seems to have been true for some other birds (Sage, 1962; Gross, 1965).

I am indebted to Mrs. H. Newcomb Wright of Spring Hill Estate, Arima Valley, Trinidad, for her hospitality and permission to study the swifts nesting there, and to Juan Hernandez, Rudal Ramlal, and Balmakoon Singh for valuable field assistance.

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The original name of the Black-headed Canary *Serinus alario* (Linnaeus)

by R. K. Brooke

Received 20th May, 1967

While examining the arrangement of seedeaters in the 10th edition of Linnaeus' *Systema Naturae* Tomus I (1758) I came across *Emberiza alario* on page 179 described as "capite pectoreque atro, abdomine albo, aliis rubris. *Habitat ad* Caput bonae Spei." and based on the Passer capensis of E. Albin's *A supplement to the natural history of birds* III: 63 (1740). This name is not alluded to in White *A revised check list of African flycatchers, tits, tree creepers, sunbirds, white-eyes, honey eaters, buntings, finches, weavers and waxbills* (1963) or in any other recent book dealing with the south African avifauna. There are two possible explanations of this position: the name is indeterminate or it has been overlooked. The latter is in fact the case and probably arises from the old English custom of starting binomial nonenclature from Linnaeus' twelfth edition. The original reference is given in White (*op. cit.*) as *Fringilla alario* Linnaeus *Syst. Nat.* ed. 12, I, p. 319 (1766). This is a slightly longer entry than in the tenth edition: the description is somewhat fuller and Brisson is alluded to as well as Albin. I am obliged to C. W. Benson for examining the twelfth edition as well as Albin at my request. Albin worked from an aviary bird in the collection of Lord Ilay which he described and illustrated in colour. Benson remarks (*in litt.*) of this picture "I have no reason to suppose that this is anything but a ♂ *Alario alario*" and adds that it could not be a poorly drawn *Passer melanurus* (S. Muller), the only species at the Cape of Good Hope with which it might be confused. I have examined ♂♂ *Serinus alario* in the National Museum, Bulawayo, and find that they correspond adequately with Albin's description and the two descriptions by Linnaeus.

I therefore conclude that the bird known as *Serinus alario* was first named for science as *Emberiza alario* Linnaeus 10th ed. *Syst. Nat.* 1: 179 (1758) and that *Fringilla alario* Linnaeus 12th ed. *Syst. Nat.* 1: 319 (1766) is an objective synonym.

Apus apus apus in the Cameroons

by R. K. Brooke and M. A. Traylor

Received 16th June, 1967

Lack (1956) states that the European Swift *Apus apus apus* (Linnaeus) winters south of 10° S and that all birds taken north of that latitude are on passage. He expressed this view because he had not seen mid-winter (from the northern point of view) material from further north in Africa nor read of it. White (1965) follows Lack (*op. cit.*). Since then Serle (1965) has reported a specimen collected at 6° N at Sabka in the former British Cameroons on 12th January and de Roo (1966) has reported seventeen Congolese specimens collected in December and January between 7° S and 2° N. The Field Museum of Natural History, Chicago, has material collected by A. I. Good and briefly reported by him (1952) under the heading *A. sladeniae* (Ogilvie-Grant). All his sixteen specimens are referable to *A. a. apus*, and all but one were taken in January and February in the southern Cameroons at 3°–4° N. In view of these substantial series the normal wintering grounds of *A. a. apus* must be deemed to include both Congo and the Cameroons to at least 6° N. As a corollary *A. barbatus sladeniae* does not occur regularly in the Cameroons being only known from one record, that from Bakossi which is the type of *A. melanotus* Reichenow.

The origin of the Cameroon wintering birds is uncertain. They exhibit a remarkable range in wing length: from 153 to 184. The larger ones probably represent the breeding populations of southern Europe, *kollibayi* Tschusi, for which Hartert (1912) gives measurements up to 185 mm. Nominate *apus* has wing lengths of 163–177, and according to Hartert (*op. cit.*) the populations from Tunisia fall within this range. There is no known breeding population with wing lengths below 160mm. and the two Cameroon specimens with wings 153 and 155 probably represent an undescribed race. However, without some indication of their breeding range we prefer not to name them at this time. If their short wing length can be considered evidence of a short migration route, their breeding range probably lies in North Africa.

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A new subspecies of Black Swift *Apus barbatus* from Sierra Leone

by C. W. Benson

Received 13th June, 1967

Apus barbatus glanvillei subsp. nov.

Diagnosis: Similar to *Apus barbatus sladeniae* (Ogilvie-Grant) in the reduction of white on the chin and throat, but in general colour paler, closer to *A. b. barbatus* (Sclater) and *A. b. roehli* Reichenow.

Distribution: Only certainly known from Rokupr, Sierra Leone, on the Great Scarcies River at 9° 01′N., 12° 57′ W.

Type: In the British Museum (Natural History), registered number 1938. 6. 15. 14. Female, collected by R. R. Glanville at Rokupr, 20 feet above sea level, 28th September 1937, collectors' number 226.

Measurements of type: Wing 175, tail 74 mm.

Colour of soft parts: Bill black, feet and irides dark brown.

Material examined: One specimen of *A. b. glanvillei* (the type), four of *A. b. sladeniae* (including the type), fifteen of *A. b. roehli*, thirteen of *A. b. barbatus*, all in the British Museum.

Remarks: The type of *glanvillei* had been misidentified as an *A. a. apus* (Linnaeus), but is clearly attributable to *A. barbatus*, not *A. apus*. The differences between the two species are given by Lack (1956: 50–51). Thus this specimen from Sierra Leone has the wings quite strongly greenish bronzed, the underparts have well marked white tips to the feathers, and the difference in length between the outermost pair of rectrices and next adjacent pair is only 2 mm. The first (outermost) primary is shorter than the second by 5 mm.

All four specimens of *sladeniae* have the mantle markedly blue-blackish contrasting with the brown of the crown and rump. Most specimens of *roehli* and nominate *barbatus* show an analogous contrast, though the blackish mantle lacks any blue tone as in *sladeniae*. The specimen of *glanvillei* shows no contrasting darkening of the mantle, which is practically concolorous with the brown crown and rump. Two specimens of nominate *barbatus* and four of *roehli* show a similar lack of contrast, which is perhaps due to wear. It is not a sign of immaturity, since an immature specimen of *roehli*, with white margins to the secondaries and their coverts, has a well marked blackish mantle. Apart from the uniform brown upperside of the specimen of *glanvillei*, it is altogether paler than the four of *sladeniae*, but can only be distinguished from the specimens of nominate *barbatus* and *roehli* lacking the dark mantle by the reduction of white on the chin and throat as in *sladeniae*. The strong greenish-bronze on its wings, already mentioned, is equalled only in five other specimens examined—in two of nominate *barbatus* and in three of *roehli*.

According to White (1965: 212), *A. barbatus* is unknown in West Africa west of Fernando Po and the southern Cameroons, where it is represented by *sladeniae*. Thus the Sierra Leone specimen represents an extension of the known range of the species by some 1,500 miles. Although it is the only one available, the assignment to it of a new subspecific name is considered unavoidable, in view of its distinctness in colour and the remoteness of Rokupr, Sierra Leone, from the range of *A. barbatus* as otherwise known.

The information in this paragraph has been almost entirely supplied by Mr. Glanville, from his local knowledge of Sierra Leone, where he was a member of the Department of Agriculture, and from the notes which he made when living at Rokupr and he collected the specimen of *glanvillei*. The country south of Rokupr, near the Great Scarcies River, consists mostly of flat, extensive swampland, largely under wet rice cultivation, while even to the north for a considerable distance there is no ground more than 100 feet above sea level, low "bush" with oil-palms and tall grasses predominating. As elsewhere (see for example McLachlan and Liversidge, 1957), presumably *A. barbatus* in Sierra Leone requires crevices in cliffs or vertical rock-faces for breeding. The nearest such sites to Rokupr would appear to be in neighbouring Guinea, some 60 miles due north. In Sierra Leone they exist 80 miles north-east of Rokupr, and in numerous places further north and east within the territory. Bates (in Bannerman, 1931 691) records swifts believed to be *A. apus* around rocky places on the Birwa Plateau (8° 50′ N., 10° 48′ W.) on 9th and 18th July 1930. These could well have been *A. barbatus*, the occurrence of *A. apus* in July being unlikely. The Rokupr specimen had its stomach distended with termites. It was one of a party of some twenty feeding on these insects flighting from mounds on cleared ground at the Department of Agriculture's station there. These swifts had been around the station in small numbers for a month previously and are believed to visit the area regularly in September, which is towards the end of the dry season. However, *A. apus* may also be present, for Marchant (1942: 157) records this species as occurring in south-eastern Nigeria from as early as 25th August until as late as 25th April.

The unusually dark colour of *sladeniae* may be correlated with breeding quarters in an area of high rainfall. Thus the mean annual precipitation map of Africa in Koch and Schulze (1956) shows the figure for Fernando Po to be over 5,000 mm. (200 inches). On the coast of Sierra Leone it exceeds 4,000 mm., but inland there is a considerable drop, and *glanvillei* may breed in areas where the mean is between 2,000 and 3,000 mm. (80 to 120 inches).

Acknowledgements: Special thanks are due to Mr. Glanville for the valuable information which he has provided for the preparation of this note. I am also grateful to Mr. J. D. Macdonald and his staff in the British Museum for making available the material therein of *Apus barbatus*.

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A case of congenital absence of the right lower limb in a Teal

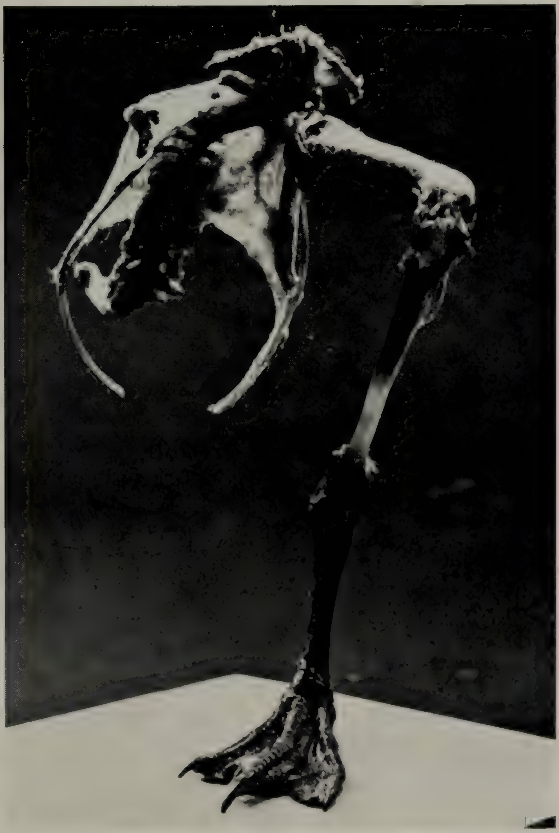
by JAMES HARRISON

Received 21st June, 1967

The literature contains fairly numerous references to birds of various species which have suffered a partial amputation of a lower limb.

Usually such cases can be recognised as due to some form of trauma; sometimes this appears to be the result of gunshot-wound, but an even more frequent cause is the injury and interference with the circulation resulting from being caught by the leg by a clam, the portion trapped in the mollusc ultimately sloughing off. The writer shot such a duck, an adult drake Wigeon, *Anas penelope*, some seasons ago, the bird being in excellent general condition.

The principal subject of this note is a first winter drake Teal, *Anas crecca*



Photograph by Pamela Harrison

Pelvic girdle and left leg of Teal, showing congenital absence of right leg. *Note.* the left leg and left half of the pelvis are quite normal.

crecca, which was shot by Mr. Hugh Andrews on 7th January, 1967 on Holbeach Marsh in Lincolnshire.

Dissection of the Teal indicates that the missing leg must have been of congenital origin; in fact, an instance of a developmental error, in which in embryological life a limb bud had failed.

The basis for this opinion is the discrepancy in the measurements of the two sides of the pelvis, and the fact that the right acetabulum is obviously poorly developed. The overall attenuation is, of course, due to the fact that the stimulus of weight bearing and other movements has been lacking. The measurements are as under:–

		Right side	Left side
ischia:	(measured from end of dorsal vertebrae to the acetabulum)	=23 mm	22mm
ilia:	(measured from the acetabulum to tubercle on posterior free edge of ilium)	=28 mm	27mm
free end of pubic bones:	(measurements taken from their origins to tips)	=22 mm	22mm

The interest of these measurements is enhanced by the fact that the last pair are equal, and the only observable difference is that the right side is appreciably attenuated. That this component of the pelvis has maintained its growth apparently normally insofar as length is concerned, is evidence that this occurs independently of stress, though lacking the factor connected with weight bearing, and that other stresses, no doubt operating in a normal individual, have been insufficient to stimulate this element of the pelvic girdle, in a bird with this anomaly, to full development.

This bird was hatched last year and is in the transition plumage from immature to first winter dress. Its general condition, like that of the Wigeon was excellent. The case is of particular interest, for it passed through the downy stage into full body growth and into its first winter plumage. Indeed on general grounds it would presumably have advanced into the adult stage, had it not been culled in the course of wildfowling.

Here we have a bird which from the moment of hatching was obliged to hop when on the ground, demonstrating the fact that in a species which normally walks, no matter at what stage the limb is lost, it can, without apparent loss of condition, adapt to this new mode of progression.

Recently I watched a small party of Starlings (*Sturnus vulgaris*) feeding on a lawn. One, like the Teal, was lacking a leg, and it was interesting to see how, when the bird wanted to scratch its head, it was obliged to "lean" on the fore-edge of the wing of the opposite side in order to be able to do so.

What the cause was for the loss of the limb in this Starling one could not, of course, say, but in life there was no visible vestige of any part of the limb, and impression was that this, like the Teal, was a case of congenital absence.

Acknowledgements: my best thanks are due to Mr. Hugh Andrews for the specimen, and to Dr. Jeffery Harrison who made it possible for me to examine it. I am also much indebted to Dr. Pamela Harrison for the photograph.

NAT. HIST.
5 OCT 1967

CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for ''Description'', ''Distribution'', ''Type'', ''Measurements of Type'', ''Material examined'' and further sub-headings as required.

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DINNERS AND MEETINGS FOR 1967

31st October (jointly with B.O.U.), 27th November, 19th December.

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1967

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BULLETIN

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The six hundred and forty-fifth meeting of the Club was held jointly with the British Ornithologists' Union at the British Museum (Natural History) on 31st October, 1967.

A. S. Meek's three expeditions to the Solomon Islands

by SHANE PARKER

Received 17th January, 1967

Introduction

Albert Stewart Meek (born at Bow, London, 26th October, 1871, died at Bondi, New South Wales, 1943) was the first naturalist ever to visit most of the main islands of the Solomons group and form collections of birds and insects from them. Before Meek appeared on the scene, small collections of birds had been described from New Georgia, Rendova, Guadalcanal, San Cristobal, Ysabel, San Jorge, Ugi, Fauro and Munia. Apart from making further collections on the first five islands, Meek collected on Bougainville, Treasury Islands, Choiseul, Gizo, Kulambangara, Vella Lavella and Nggela in the Florida group. In three visits to the Solomons he and his collectors obtained at least 2,700 bird skins and many thousand insects, which were shipped to Lord Walter Rothschild's museum at Tring Park, England, where they were studied by Rothschild and Dr. Ernst Hartert (birds) and Dr. Karl Jordan, (Lepidoptera). Many specimens not retained by Rothschild were passed on to such dealers as Gerrard and Janson; this may have been the fate of the missing seventh specimen of the Solomons Crowned Pigeon, *Microgoura meeki*, (Parker, 1967). Thus, whereas the majority of Meek's bird skins passed with the Rothschild collection to the American Museum of Natural History, New York, in 1932, a few came *via* Gerrard to the British Museum (Natural History), London.

The following account of Meek's three expeditions to the Solomons is drawn from his letters to Hartert and Jordan, filed at the Zoological Museum, Tring. These letters are a rich source of data concerning Meek's itineraries, and also contain vivid accounts of the contemporary scene amongst the islands. Apart from illness and desertion by his boys, Meek's main problem was that he and his party had to run the gauntlet of the war of reprisal between whites and natives. A brutal white recruiting team might land at a village, burn it, and press away suitable labour. The remaining natives would then attack the next white man who came their way, irrespective of his purpose. Some islands were more hostile than others and for this reason Meek never visited Malaita.

The following notes are supplemented in a very few places by information from Meek's book *A Naturalist in Cannibal Land*, which work is more a popular zoological and ethnological commentary than a precise account of his itineraries in the South Seas.

Meek's first expedition to the Solomons, 1900-1901

Meek's small boat, the *Calliope*, left Sariba, New Guinea, on 28th November, 1900. On board were Meek's elder brother-in-law George Eichhorn, Captain E. E. Perry, six New Guinea and two New Hebrides boys. Meek had engaged Perry as he himself was then too ill with blood-poisoning to accompany his men.

En route to the Solomons the *Calliope* called at the islands of Saloga and Narova, reaching Gizo on 10th December, 1900. The following day Eichhorn fell sick and the party remained at Gizo until 15th December. Eichhorn then decided to make for Thousand Ships Bay, Ysabel, in search of a doctor. Arriving there on 18th December, the party was told by natives that the doctor was on Gavutu in the Florida group. Proceeding to Gavutu, they discovered that the doctor had left for Australia. Eichhorn then called on Woodford, a Government official, on the neighbouring island of Tulagi to pay the capitulation tax and to purchase a ship's licence. Directly after Christmas the *Calliope* sailed across to the main island of Nggela, where collections were made at Gavutu Harbour for a month, during which time Eichhorn was often very ill.

On 19th March, 1901, Eichhorn and his party arrived at Rubiana (Roviana), a small village on Roviana Lagoon, New Georgia, after having formed a second collection on the island of Kulambangara. Meek had instructed the party to collect on Kulambangara because the mountains there were close to the shore, and because he had been told that the island was uninhabited. When the party landed they found that it *was* inhabited, and consequently confined their collecting to the beaches in case a rapid retreat to the *Calliope* was required. Meek joined his men shortly after their return from Kulambangara and on 31st March, 1901 wrote to Hartert from Rubiana that he was dispatching on the next steamer the collections made so far, namely 6,367 Lepidoptera, about 1,000 Coleoptera and 185 bird skins.

Captain Perry returned to Sydney at this time, but Meek had increased his party by recruiting two more New Hebrides boys on his way across. From Rubiana the *Calliope* proceeded to Guadalcanal on 1st April, and sailing along the southern coast of Ysabel, arrived at the Florida group on 9th April. The following day Meek's boys did a little collecting on Nggela to show him what occured there, and on the morning of 11th April, the party left for Guadalcanal, where they camped at the village of Aola on the north coast, collecting there from about 14th April to the end of May. (Some of Meek's bird skins from here are labelled 31st April; he may consequently have been a day out for some time). On 31st May, Meek dispatched from Aola 5,400 Lepidoptera and 309 bird skins.

From Guadalcanal Meek sailed north to Ysabel. He did not specify his collecting locality there, other than that some work was done in the mountains, but it may well have been at Thousand Ships Bay, an area which Eichhorn had called at over five months before. The collections made there produced more startling novelties in the way of birds than any other made by Meek in the Solomons, and included *Nesasio solomonensis*, *Pitta anerythra*, *Ceyx lepidus meeki*, *Podargus ocellatus inexpectatus* and *Accipiter novaehollandiae rufoschistaceus.* Meek wrote that there were three other species on Ysabel which he failed to obtain. The party collected on Ysabel for about five weeks, from early June to 10th July, 1901, leaving the island about 11th July. Meek had intended also to collect on Choiseul, but was warned by traders that the natives there were extremely dangerous.

By 27th July, the *Calliope* was back at Rubiana, whence the Ysabel collections, including 340 birds, were dispatched. On his way back to Sariba, Meek stopped at the Treasury Islands for a little over a fortnight, where he formed a small collection whilst waiting for the weather to clear. The *Calliope* arrived back at Sariba on 20th August, 1901.

Meek's second expedition to the Solomons, 1903-1904

This memorable expedition produced, amongst other novelties, the only specimens so far known of the Solomons Crowned Pigeon, *Microgoura meeki*, and the first examples of the Imitator Hawk, *Accipiter imitator*, not recognised as distinct from the sympatric Pied Hawk, *A. albogularis*, until 1926, by Hartert.

Meek left Samarai, New Guinea, in the pearling lugger *Hecla* on 12th October, 1903, with his younger brother-in-law Albert Eichhorn, his two kanakas and twelve New Guinea boys. Work in the Solomons commenced on the island of Gizo, whence on 24th November, 1903, Meek dispatched 3,067 insects, 256 bird skins and about 20 small mammals.

The *Hecla* left Gizo on 28th November and after six day's sailing reached Tambotambo on the northern coast of Choiseul. Unable to camp on the mangrove-lined coast, Meek based his party on an offshore island. Collecting was carried out on the opposite mainland along a river, probably the Tarapa, about a mile from the base island. The natives of the district were very numerous, and while Meek was there several killings occurred amongst them, though Meek's party went unmolested. Birds were collected from 5th—31st December, 1903.

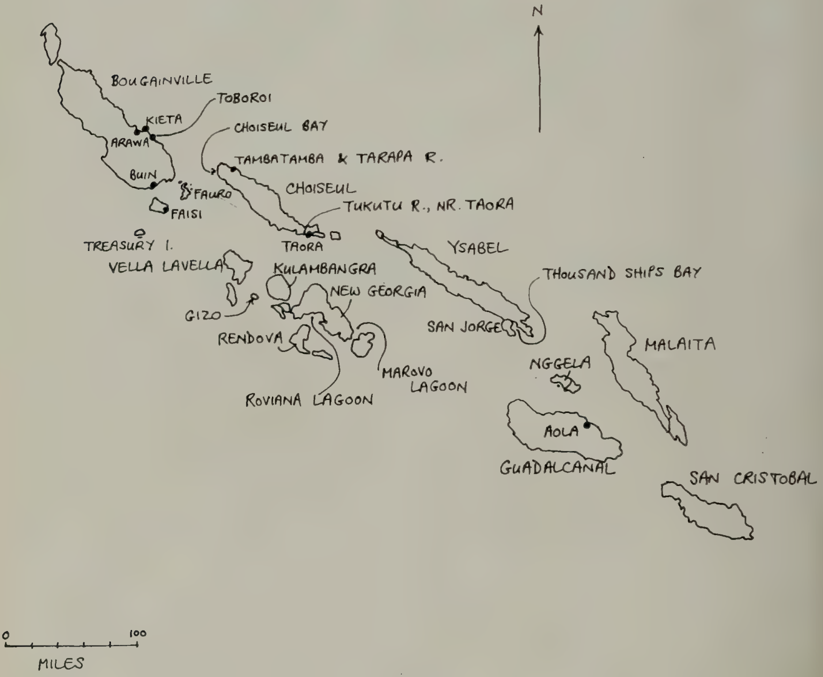
The second of Meek's three camps on Choiseul, where the party collected from 4th—11th January, 1904, may be calculated from a letter Meek wrote to Rothschild from Yatte Yatah, New South Wales on 29th January, 1929: "I met a man [probably Rollo Beck] in Sydney a few months ago who said he was collecting for a Mr. Whitney . . . and wanted to know the exact spot where I'd taken the ground pigeon (*Microgoura meeki*). He'd already been thereabouts a long while. When I told him he was surprised to find he had anchored there and collected for some weeks without dropping across it." This was a reference to the Whitney Expedition's collecting localities on Choiseul in 1927, when, under Rollo Beck, the expedition called at Moli for 6 days and southern Choiseul Bay for 4 days. The Whitney Expedition returned to Choiseul in September, 1929 and collected at northern Choiseul Bay for 16 days, not visiting Moli at all. This strongly suggests that the type-locality of *Microgoura meeki*, related by Meek to

Beck, was Choiseul Bay, and that the Whitney team, in receipt of this information, revisited this locality for a more thorough, though still unsuccessful, search for the ground pigeon (but see Parker *l.c.*). The holotype of *Accipiter imitator* Hartert was obtained by Meek's party at this camp.

Meek's third and last camp on Choiseul, where birds were collected on 13th—14th January, 1904, was pointed out by natives to Hannibal Hamlin, a Whitney collector, while the latter was working at Taora at the eastern tip of Choiseul in late October and early November, 1929. Hamlin indicated the area of Meek's collecting on his sketch map (Parker *l.c.*) as the coastal lowlands west of the Tukutu River, probably including the swampy Viuvomba headlands. It was here that one of Meek's boys shot the holotype of *Zoothera dauma eichhorni* Hartert, a species that remains known from the Solomons by this single specimen.

The *Hecla* was back at Gizo by 16th January, from where the Choiseul material, including over 300 bird skins, was dispatched. Meek began collecting on Rendova in early February and continued until the end of

SKETCH MAP OF THE SOLOMON ISLANDS SHOWING SOME LOCALITIES MENTIONED IN THE TEXT.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BOUGAINVILLE
TOBOROI
KIETA
ARAWA
CHOISEUL BAY
TAMBATAMBA & TARAPA R.
BUIN
FAURO
CHOISEUL
TUKUTU R., NR. TAORA
FAISI
TREASURY I.
TAORA
YSABEL
VELLA LAVELLA
KULAMBANGRA
THOUSAND SHIPS BAY
NEW GEORGIA
GIZO
SAN JORGE
MALAITA
RENDOVA
NGGELA
MAROVO LAGOON
ROVIANA LAGOON
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the month. After a few days the party moved across to the Roviana Lagoon area of New Georgia, where collections were formed from about 7th—14th March. Rendova was then briefly revisited and about half a dozen more birds collected there. Over three hundred birds were obtained from these last two islands.

After dispatching the Rendova and New Georgia collections from Gizo, Meek proceeded to Bougainville, then a German possession. Although he should have gone across to New Britain to obtain permission from the German authorities to visit Bougainville, he decided to take a risk and, sailing up the north-eastern coast, camped a little way up a river a few miles south of the Toboroi district. Thus hidden from the sight of German patrol boats, Meek's party collected there from about 9th April to 12th May, 1904.

The *Hecla* was at the Shortland Islands by 25th May, over 300 birds having been obtained on Bougainville. The period immediately before or after Meek's visit to Bougainville may have been spent in the Fauro Islands at the south-eastern end of Bougainville. Amongst the Whitney Expedition fieldnotes, deposited in the A.M.N.H., is this entry by Richards: "30th November, 1927. Tamo, Fauro Islands . . . Our anchorage was between the northern tip of Tamo Island and the mainland . . . Five miles away through the inlet and across a large bay is the native village of Kariki. I rowed over . . . We were given a fine welcome. Sterling, an old man of the village, who had once been employed by an American . . . recalled a man who had once come to the village years ago looking for birds, insects and reptiles. He, like us, had also been on the lookout for a crested pigeon (he drew an outline of the bird in the sand). Although he had been unable to find one, he had succeeded very well in catching a number of birds (evidently ground doves) with lime. This man had remained in the region of Kariki for over a month. The captain and I concluded that he must have been Meeks (*sic*), Rothschild's man." Although this almost certainly was Meek, on the lookout for his prize discovery, *Microgoura*, no mention of his having collected birds on Fauro is to be found in Rothschild and Hartert's accounts of his collections in the *Novitates Zoologicae*, though this may have been because Fauro was not in the agreement drawn up between Meek and Rothschild, in consequence of which Meek may have disposed of his Fauro material elsewhere.

Meek left the Shortlands on 31st May, after dispatching the Bougainville collections, and made straight for Samarai, from where he proceeded to Cooktown, north Queensland, to rest from collecting. Altogether he obtained nearly 1,200 birds on his second Solomons expedition, of which about 800 passed with the Rothschild Collection to the American Museum of Natural History. Most of the remainder were passed by Rothschild to Gerrard, who sold them widely; a hundred were purchased by the British Museum (Natural History). The location of Meek specimens other than those in New York or London would make an interesting and valuable study.

Meek's third expedition to the Solomons, 1907-1908

Meek's intention in visiting the Solomons for the third time was to collect in the mountains of some of the larger islands. Most of his previous work in the group had been restricted to the coastal lowlands; in some cases the collectors never strayed far from the beach for fear of hostile natives. However, although on some islands the natives were still murdering white men with distressing frequency, Meek found that others, such as Bougainville, had changed since his last visit, and that the number of areas where white men could go unmolested had greatly increased.

Meek left Samarai in his ketch *Shamrock* on 30th October, 1907, with Albert Eichhorn and a crew of New Guinea and Thursday Island boys. He reached Gizo on 10th November, and there received a letter from Dr. Karl Jordan requesting the party to proceed to Bougainville to search for the recently described butterfly *Papilio laglaizei toboroi* Ribbe, 1907. After calling at Faisi in the Shortland Islands to pick up more crew as shooting boys, Meek left for Buin, at the south-east end of Bougainville, on 21st November. At Buin he met the collector of the new *Papilio*, a Catholic Father. With the priest on board, Meek sailed the *Shamrock* up the north-east coast to Kieta, the site of a new Government station, arriving there on 24th November. From there the party moved a little further up the coast to Ameo (6° 16′ S., 155° 34′ E.), whence they intended to travel inland. Meek carried out a preliminary survey from there, reaching an altitude of about 3000ft., but to his disappointment found little or no virgin forest, a consequence of the dense native population of the district. Only along the coastal fringe was there undisturbed vegetation, the greater part of the area comprising gardens and secondary growth. Meek was unable to collect in the mountains as thoroughly as he had hoped: the native carriers backed out of the journey and his own boys soon tired of making daily trips from the coast to the mountains to return with nothing.

Meek's collection was formed in the Arawa district (6° 12′ S., 155° 34′ E.) near Ameo (Harawa on specimen labels), from about 3rd—28th December. He was not impressed by the birds collected but obtained forty specimens of the new *Papilio*, possibly from the type-locality, in the Toboroi district.

Leaving the Arawa district the *Shamrock* took three days to gain the Bougainville Straits because of calm weather. Once in the the straits, however, she had to shelter from a violent squall in a tiny cove for two days. The party returned to Buin, where Meek became seriously ill with an outbreak of abscesses and for most of the time stayed in a rented native house while his boys, assisted by the local natives, collected under his direction. Collections were made at Buin from about 11th—19th January, 1908. Meek assured himself that *Microgoura* did not occur on Bougainville, but was told by natives that it was to be found on Ysabel and Malaita.

The *Shamrock* was back at Gizo by 7th February, whence Meek dispatched about 300 bird skins and 4,000 Lepidoptera. From Gizo the party proceeded to the north-east coast of Vella Lavella, where they collected from about 14th February to the end of March. On his return to Gizo, Meek found a letter from Jordan stating that no more collections were desired from the western end of the Solomons and instructing Meek to visit if possible Malaita, San Cristobal, Rennell and the highlands of Guadalcanal. Meek dispatched the Vella Lavella collections from Gizo on about 2nd April. As his New Guinea boys' time had expired he had to ship a new crew, of eight Vella Lavella and five Malaita boys. His ship-master also left at this point, leaving Meek with only one other white man, his assistant Albert Eichhorn.

After a voyage from Gizo of seven days without anchoring, the *Shamrock* reached Gavutu in the Florida group on about 8th April. There Meek saw Woodford, who asked him not to visit Malaita because of the danger from hostile natives. Leaving Gavutu on 12th April, Meek continued on to San Cristobal, putting in twice at Guadalcanal *en route*. He attributed the smallness of the San Cristobal collections, about 180 birds and 1,300 Lepidoptera, to the poorness of the country, the desertion of his five Malaita boys and his own illness there. He dispatched these collections from Lunga, Guadalcanal, on about 13th May, then sailed across to Gavutu and on to Ysabel, not doing much collecting but buying turtle shells and native money. The desertion of his Malaita boys persuaded him to omit Rennell entirely.

During the last days of May, on his way to Gizo, Meek sailed past Marovo Lagoon. Meanwhile, within the lagoon, near Sengi, New Georgia, a tragic coincidence was occuring. A trader named Oliver, who had purchased the *Hecla* of Meek eighteen months before, was sitting on the rail of his vessel when he was tomahawked from behind by Marovo warriors. His four Malaita men were also murdered. The *Hecla*, with the bodies still on board, was rowed by the warriors round to Votana on Vangunu Island, where she was set on fire and destroyed. (The ringleader of the murderers, one Ngatu, was imprisoned in Gizo gaol, and died there in the early 1950's (J. Ritchie, *in litt.*, 19th February, 1966).

By 4th June, 1908, Meek was back at Samarai. His opinion of his latest trip was that, compared with the other two Solomons expeditions, it was a failure regarding novelties; certainly Rothschild and Hartert did not comment upon any of the material in the *Novitates Zoologicae*. Dissatisfied with his latest collections, upset by the *Hecla* tragedy, and feeling the need to rest after frequent and wearying outbreaks of abscesses, Meek did no more serious collecting until his Snow Mountains expedition of 1910.

Acknowledgements

I am indebted to Miss P. N. Thomas, Librarian of the Zoological Museum, Tring, for making available Meek's correspondence; Mr. C. N. Smithers, Curator of Insects at the Australian Museum Sydney, for details of Meek's death; Dr. Dean Amadon and Mrs. Mary LeCroy of the American Museum of Natural History, New York, for sending me a copy of Hamlin's sketchmap of Choiseul and much information concerning Meek's bird specimens from that island; Mr. Ian C. J. Galbraith of the British Museum (Natural History), who, whilst visiting the A.M.N.H., transcribed for me those parts of the Whitney journals dealing with the search for *Microgoura;* and Mr. John H. Ritchie, of the Custom House, Honiara, British Solomon Islands, for supplying information on the fate of the *Hecla* additional to that found in Meek, 1913: 193-4.

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Additional notes on the eggs of the Giant Cowbird

by F. HAVERSCHMIDT

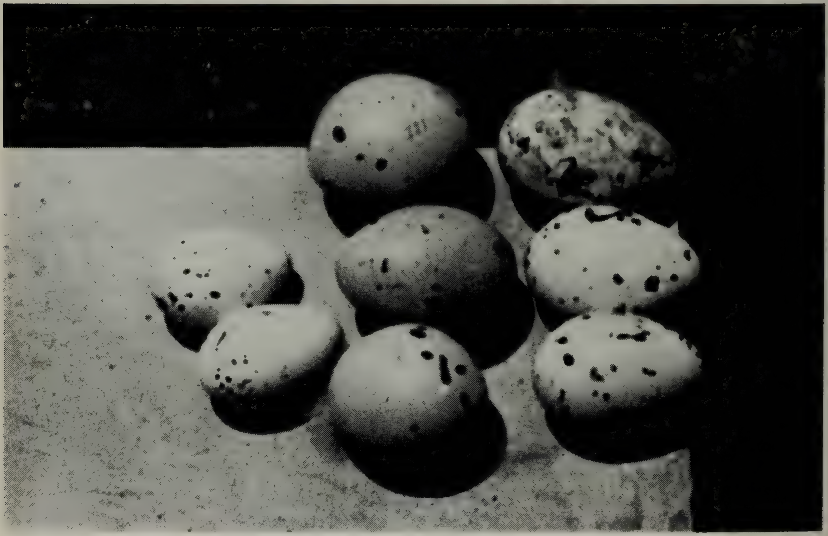
Received 29th July, 1967

In my previous note on this subject (*Bull. B.O.C.* 86, 1966: 144-147) most of my own records of the eggs of the Giant Cowbird (*Scaphidura oryzivora*) pertained to those found in nests of *Psarocolius decumanus.*

I have now additional information on eggs of this parasite in nests of *Cacicus cela.*

Mr. Th. Renssen found a small colony of *Cacicus cela* at Spieringshoek plantation, Surinam, on 2nd April, 1967, which he inspected in spite of the presence of a large wasps' nest in the middle of it. The colony proved heavily parasitised by *Scaphidura.* Though the total number of nests of *Cacicus* was not specified, I received 12 eggs of *Scaphidura* and four of *Cacicus.*

Apart from eggs in all stages of incubation there was also a number of nestlings of the parasite and I received a nearly full fledged nestling of *Scaphidura* (now preserved in the Leiden Museum) which was the sole occupant of one of the nests. Four nests each contained two eggs of the parasite and two of the host; the remaining nests one egg of the parasite and two of the host. All 12 eggs of *Scaphidura* were of a pale blue ground colour with a few small black spots and hair-lines. In shape they differed a great deal, for eight of them were elliptical and four oval. The 12 eggs averaged 32.5 x 26.3 mm., the largest 35.3 x 25.4 and 32.5 x 28mm.,



Left Row: Two eggs of *Cacicus cela*
Centre Row: Three eggs of *Scaphidura oryzivora* from nests of *Cacicus cela*
Right Row: Egg of *Psarocolius decumanus* (top)
Two eggs of *Scaphidura* from nests of *Psarocolius decumanus* (centre and lower)

the smallest 30.2 x 26.9 and 34.3 x 25.1 mm. The weight of six unblown fresh eggs was 9.7—12.6 grams (average 11.7 grams.).

Four eggs of the host *Cacicus cela* had a white ground colour with blackish spots and hair-lines; they averaged 27.3 x 18.7 mm.

It is very interesting that all the eggs of *Scaphidura* in this colony of *Cacicus cela* were in colour as well as in shape totally different from the white eggs of *Scaphidura* in nests of *Psarocolius decumanus* described in my earlier notes. As up till now white eggs of *Scaphidura* seem to be unknown from nests of *Cacicus* and blue eggs of the parasite practically unknown from nests of *Psarocolius* (only Smooker mentions them but his records seem not wholly satisfactory) I feel inclined to the view that the statement made by the Penard brothers as long ago as 1910, that the eggs of *Scaphidura* in nests of *Cacicus* are different from those laid in nests of *Psarocolius* is indeed correct, and is in my opinion a most interesting fact of brood parasitism.

Further observations will be necessary to see if blue and more rounded eggs of the parasite are indeed confined to *Cacicus cela* and white more elongated eggs to nests of *Psarocolius decumanus*.

Cisticola aberdare a good species

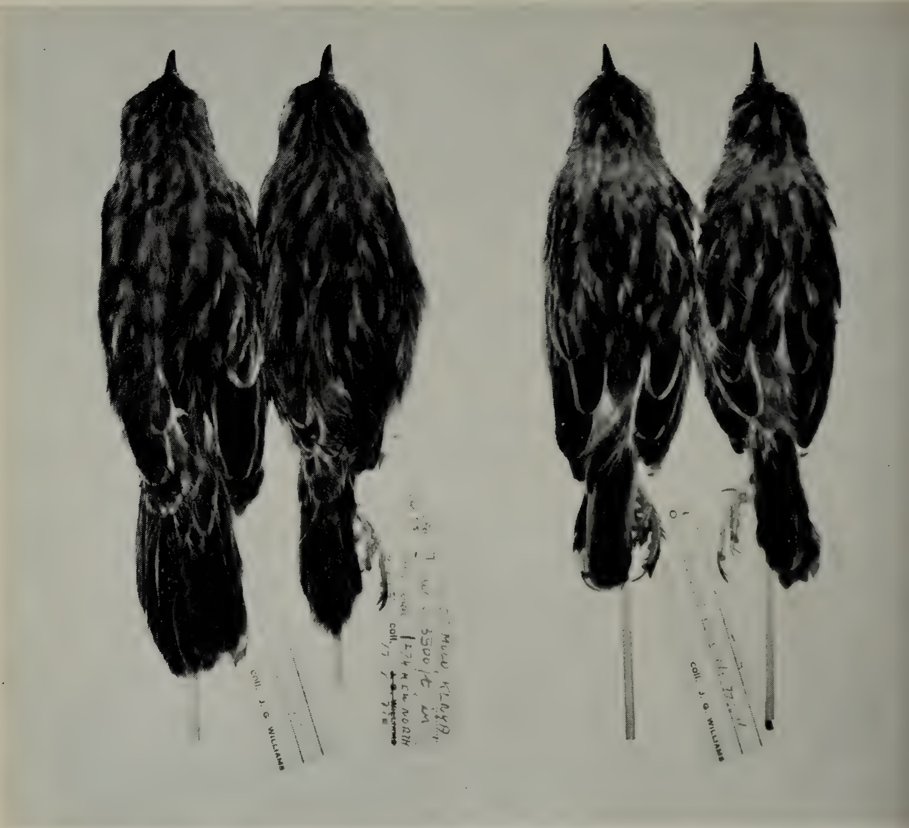
by Melvin A. Traylor

Received 26th June, 1967

In July 1966, at the 14th International Ornithological Congress at Oxford, Mr. Myles North presented a paper supported by tape recordings of the songs of different populations of some species of African birds. Among those were the songs of *Cisticola robusta ambigua* of the Kenya highlands and *C.* "*robusta*" *aberdare* from high altitudes on both sides of the Rift Valley in Kenya. On the basis of striking differences in voice plus the fact that both occurred in close proximity at Molo on the western side of the Rift, North believed that *aberdare* should be considered a distinct species and not a race of *robusta.* Examination of a series of skins from the National (formerly Coryndon) Museum of Nairobi, collected at Molo, shows that North was quite correct in his belief, and that the two species occur at Molo without intergradation or evidence of interbreeding and may thus be considered sympatric at this locality.

In his original description of *aberdare*, Lynes (1930, *Ibis*, Cisticola Supp., p. 426) stated that it was similar in size to the surrounding *ambigua*, but darker in general colour like the summer plumage of nominate *robusta.* The most notable character was the colour of the tail, which, except for the buff tips, was so dark that the subterminal black spots disappeared, even when viewed from below.

Lynes had only four adults available for his original description. Examination of a fresh series of seven adult males and one adult female from Molo shows that there are other characters both of colour and size which distinguish *aberdare* from *ambigua.* One of the most marked specific characters of *robusta*, including the race *ambigua*, is the clear rusty nape, forming a reddish hind collar separating the streaked crown and back (see figure). In *aberdare* this hind collar virtually disappears, and the dark streaking of the hind crown extends down over the nape. In the winter



Comparison of *Cisticola aberdare* (left) and *C. robusta ambigua* (right). In each pair the male is to the left. The distinguishing characters evident in the figure are the clear, unstreaked nape of *robusta*, and the greater size and proportionately longer tail of *aberdare*. All specimens are from the vicinity of Molo.

plumage of nominate *robusta* the nape may be somewhat mottled rather than clear, but the mottlings are never so bold as the streaking on the crown.

In size, *aberdare* averages larger in wing length than *ambigua* and has an absolutely and proportionately longer tail. Among the specimens measured there was no overlap in tail measurements between the two species. Of six adult males of *aberdare* the shortest tail length was 55 mm., while of 30 males of *ambigua* the longest tail length was 54 mm. The difference was even greater in females; the longest tail length out of 20 females of *ambigua* was 48 mm., while two adult female *aberdare* both measured 55 mm. Comparative measurements of the two species are given below; those for *ambigua* were taken from specimens from the highlands west of the Rift, in the general area of overlap.

	Wing	Tail	Culmen	Tarsus
aberdare				
6 ♂♂	73–76 (74.5)	55–62 (59.1)	16–18 (16.8)	26–28 (27.0)
2 ♀♀	65, 71	55, 55	15.5, 16	23, 25
ambigua				
10 ♂♂	66–72 (69.6)	45–54 (49.0)	15–17 (15.9)	25–27.5 (26.4)
12 ♀♀	58–63 (60.0)	41–48 (44)	14–15 (14.5)	22–25 (24.0)

	tail/wing ratio	*♀/♂ wing ratio*
aberdare		
♂♂	79%	91%
♀♀	81%	
ambigua		
♂♂	70%	86%
♀♀	67%	

The proportionately longer tail of *aberdare* is evident in the tail/wing ratios above. The difference in sexual dimorphism shown by the ♀/♂ wing ratio may be significant, but with only two *aberdare* females available it is not possible to be sure.

Aberdare was discovered at 9–12,000 feet in the Aberdare mountains on the east side of the Rift; on the west side of the Rift it is now known to occur both at Molo and at Mau Narok, some 30 miles south-east and appears to be commonest in the high downlands around 8,500 feet. *Ambigua* has a wide range over the Kenya highlands mostly around 5,500 to 7,500 feet; it is the race of the Rift floor, thus separating the two *aberdare* populations, and it also encircles them on their non-Rift sides. However, among the National Museum series are four males and one juvenal female of *aberdare* and one female and one first winter male of *ambigua*, all collected at Molo at 7,700 feet, between 8th and 12th December 1964 by John Williams. These demonstrate actual sympatry between the two species, and not just altitudinal replacement. Lynes, p. 425, notes that *ambigua* has been collected at 8,000–8,500 feet, on the Mau downs, which is near the area where *aberdare* has been located and affords additional evidence that the two species are sympatric.

While the evidence is conclusive that *ambigua* and *aberdare* behave as distinct species, their relationship to nominate *robusta* and to the other races of the group are not equally clear. In the previous discussion, Lynes' concept of the species *robusta* was accepted for all races except *aberdare*, which was considered a separate monotypic species. However, John Williams (*in litt.*) has suggested that *aberdare* and the Abyssinian races of *robusta* may be conspecific, and that the remaining races may form a second species for which *angolensis* is the oldest name. The Abyssinian races, *robusta* and *omo*, here joined as *robusta* for convenience, are completely isolated from any of the remaining races by several hundred miles of inhospitable terrain. No ornithologist familiar with either *ambigua* or *aberdare* in the field has had an opportunity to observe the behaviour of *robusta*. This is unfortunate, because in the genus *Cisticola* the song and courtship behaviour are frequently the most reliable clues to relationship. The only description of the song of *robusta* is that of Cheesman (1935, *Ibis*: 620), and according to North it seems to show no relationship to that of either *ambigua* or *aberdare*.

Below I have tried to tabulate the various characters other than behaviour that might indicate the relationship of *robusta* to either *ambigua* or *aberdare*.

1. Characters uniting *robusta* more closely with *ambigua*.
    a) the clear nape of *robusta* is much more like that of *ambigua* than like the streaked nape of *aberdare*.
2. Neutral characters
    a) the long winter tail of *robusta* is similar in proportion to the perennial long tail of *aberdare*, but the short breeding tail is similar in proportion to that of *ambigua*.
    b) *robusta* is the largest race, and thus nearer in size to *aberdare* than to *ambigua*; however, *angolensis*, which Lynes found to be identical with *ambigua* in behaviour and clearly conspecific, is equally large.
    c) geographically, the gaps in ranges between *robusta* and *ambigua* and *aberdare* respectively are equally great.
3. Characters uniting *robusta* more nearly to *aberdare*.
    a) *robusta* and *aberdare* prefer higher altitudes, the former occurring between 6,600 (rarely down to 5,000 according to Cheesman) and 8,800 feet, and the latter between 7,700 and 12,000 feet. *Ambigua* ranges from around 3,000 to 8,600 feet.

None of the above characters are conclusive in themselves, although the first, the clear nape of *robusta* and *ambigua*, may perhaps be given more weight than the others. In the absence of conclusive evidence furnished by the comparative behaviour of the three forms, I prefer to upset the established nomenclature as little as possible, and to keep *aberdare* a monotypic species, and all the other subspecies, from Abyssinia to Cameroon and Angola, as races of *robusta*.

The fine series from Molo, including ten *aberdare* and two *ambigua*, are from the collection of the National (formerly Coryndon) Museum of Nairobi, Kenya and I am very grateful for the opportunity to examine them. I would like to thank Mrs. B. P. Hall of the British Museum (N. H.) and Mr. G. Stuart Keith of the American Museum for their help in arranging this loan. I am deeply indebted to Mr. Myles North not only for his original discovery but for his kindness in reading this paper and his many valuable suggestions. Mr. North wishes to thank Mr. and Mrs. Sessions of Mau Narok and Mr. and Mrs. Start of Molo, with their sons, for much hospitality and ornithological co-operation; Mr. John Williams, till recently of the Nairobi Museum, for identifying and preparing the specimens and for his suggestions concerning the relationship of *aberdare*; Mr. G. Stuart Keith for his help when Mr. North was ill; and Mrs. Hall and myself for examining and reporting on this collection.

Mr. North informs me that a considerable amount of field work on *aberdare* has been done by Mr. Sessions (on whose farm *aberdare* was discovered, on account of its voice) and by the Start family, as well as by himself, and that it is intended to publish the results in due course.

A Swift, *Apus a. apus*, with twelve rectrices

by A. De Roo

Received 12th July, 1967

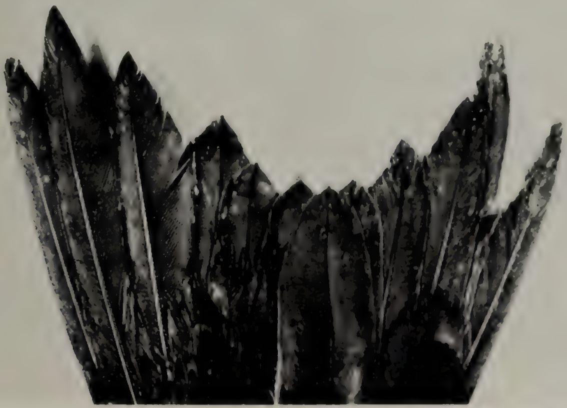
All Apodidae normally have ten rectrices and apparently no exceptions are described.

The present exception deals with an European Swift, *Apus a. apus* (L.) breeding at the colony of Overijse, 15 km. to the south-east of Brussels, Belgium. This bird was caught on its nest on 1st July, 1966 and, after close examination, released with ring Bruxelles X77344. Besides the normal ten tail feathers an additional outermost or 6th pair of rectrices was found, of the same general shape as that of the 5th pair, but 5 mm. shorter on the right side of the tail and 1.5 mm. longer on the left side. Detailed measurements of the twelve rectrices are given below.

Other characteristics: wing length, 180 mm.; tail, 74 mm.; weight at 19.20 hrs. 44.5 g. Primaries 1 to 9 of adult type but outermost or 10th primary conspicuously worn in both wings (for age-characteristics in *A. apus*, see De Roo, 1966). As a case of partial albinism, one single white body feather was also found in the middle of the rump.

The sex of the Swift is unknown but there is some evidence of male behaviour: its partner had a normal ten-feathered tail and so had the two young they reared from a C/3.

In 1967 this bird came back to its nest on 1st May while the partner arrived the day before. Examined on 7th May the tail again presented twelve fresh rectrices, the 6th pair being 5 and 9 mm. shorter than the 5th right and left rectrices respectively and also more rounded towards the tip (see photograph). Full measurements are given overleaf.



Photograph, Museum Tervuren

Aberrant twelve-feathered tail in *Apus a. apus*

Other characteristics: wing length, 182 mm.; tail, 73 mm.; weight at 21,00 hrs., 50.0 g.; at 08.30 hrs. next day, 47.5 g. Outermost primaries inconspicuously worn, thus moulted independently of the general descendent moult pattern and most probably in Sept.-Oct. 1966 before the renewal of the next large primaries 6 to 9. Again one single white body feather was noted on the middle of the rump and two others in a symmetrical arrangement under the axillaries. Dozens of pure white *filoplumae* were also found on the head and others of pale brown colour on the back. These hair-like structures with small terminal fanions (0.5 to 1 mm.) were probably overlooked in 1966 as they are rather concealed by the body feathers.

The bird was released on 8th May, 1967 and three eggs were laid on 17th, 19th and 21st May, respectively. Two young hatched on 8th June, the third on 9th June. At the present date (20th June 1967) the growing "pins" of the rectrices clearly show that all three the young will develop a normal ten-feathered tail.

Measurements: length difference (in mm.) of the rectrices as compared to the median pair scoring 0 mm.

	Left half of tail						Right half of tail					
	6	5	4	3	2	1	1	2	3	4	5	6
1/7/1966	+25	+23.5	+15	+8	+1.5	0	0	+1.5	+7	+14.5	+22.5	+17.5
7/5/1967	+14	+23	+15	+7	+1	0	0	+1	+6.5	+14.5	+22	+17

The present tail aberration, together with the degenerate body feathers and partial albinism, may be an atavistic manifestation due to in-breeding dependent on the high degree of fidelity to the nest-site in *A. apus*.

Reference:

De Roo, A. 1966. Age-characteristics in adult and subadult Swifts—*Apus a. apus* (L) —based on interrupted and delayed wing-moult. *Gerf.*, vol. LVI, fasc. 2, pp. 113-134.

The occurrence of Schiøler's Dunlin in south-eastern England; a race new to the British Isles

by James M. Harrison and Jeffery G. Harrison

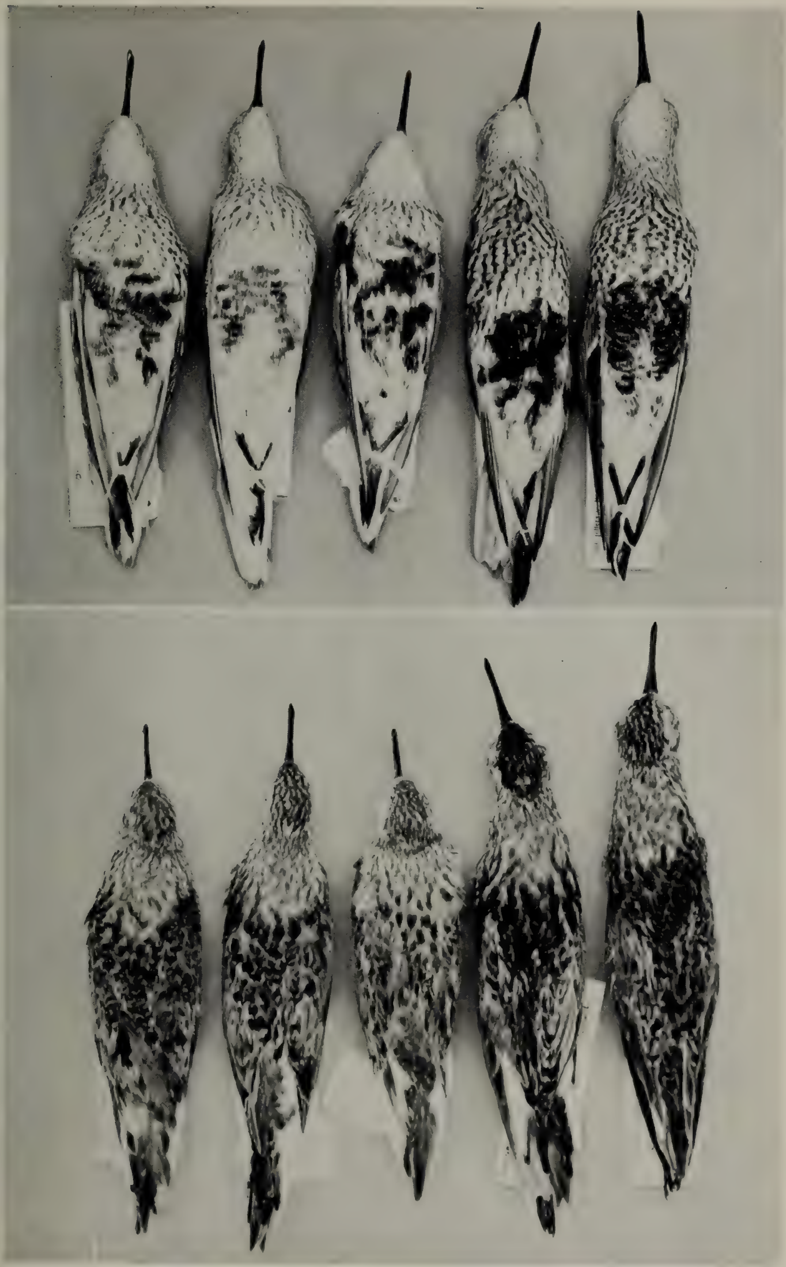
Received 2nd August, 1967

Introduction:

In 1922, Schiøler described as *Calidris alpina arctica*, the breeding population from north-east Greenland.

Salomonsen (1950) gives the breeding distribution of this high arctic form, as from Scoresby Sound north to northern Germanialand, possibly extending into southern Peary Land.

According to *The Handbook of British Birds* (1940) the only two races recognised as occurring in the British Isles are the Northern Dunlin, *Calidris a. alpina* and the Southern Dunlin, *C. a. schinzii*. These two races are similarly accepted by Bannerman (1960), who also includes the single record of the Eastern Siberian Dunlin, *C. a. sakhalina*. It is to be particularly noted that this author refers to the possibility that Schiøler's Dunlin could pass through the British Isles on migration.



Photograph by Pamela Harrison

Three adults on left Schiøler's Dunlin from Kent, fourth from left breeding bird from Iceland, on right breeding bird from Orkney.

Schiøler's Dunlin is accepted as a well differentiated race by the following authorities:—Hartert (1932), *The Handbook* (1940), Salomonsen (1950), Dementiev *et alia* (1951), Bannerman (1960) and Vaurie (1965).

Description:

In spring plumage *C. a. arctica* resembles *C. a. schinzii* but upper parts generally paler and feather margins on mantle, long scapulars and crown yellowish-brown and less chestnut; the nape tends to be greyer. Breast whiter, with finer striations than in *C. a. schinzii*, which also shows in some individuals a buffish suffusion of the neck and upper breast. With wear, by abrasion, the plumage in summer generally becomes darker and the pectoral striations become more prominent; these changes are complete by July.

In juvenile plumage the characters are basically similar in that the upper parts are generally paler, the feather margins of the crown, neck, mantle and long scapulars being pale buff to whitish. The under parts are again generally whiter and the pectoral and flank markings are less prominent.

The bill of *C. a. arctica* is markedly shorter than in *C. a. schinzii:* according to Salomonsen (*loc. cit.*) culmen measurements for the races are as follows:

C. a. arctica	*C. a. schinzii*
♂♂ 25—27.5 mm. (average 26 mm.)	♂♂ 26—31.5 mm. (average 29 mm.)
♀♀ 27—31 mm. (average 28.3 mm.)	♀♀ 30.5—35 mm. (average 33 mm.)

Vaurie (*loc. cit.*) *measuring from the nostril*, gives for ♂♂ only of *C. a. arctica* 18.5 to 24 mm., (average 21.8 mm.) compared with 23—29 mm. (average 25.1 mm.) for *C. a. schinzii.*

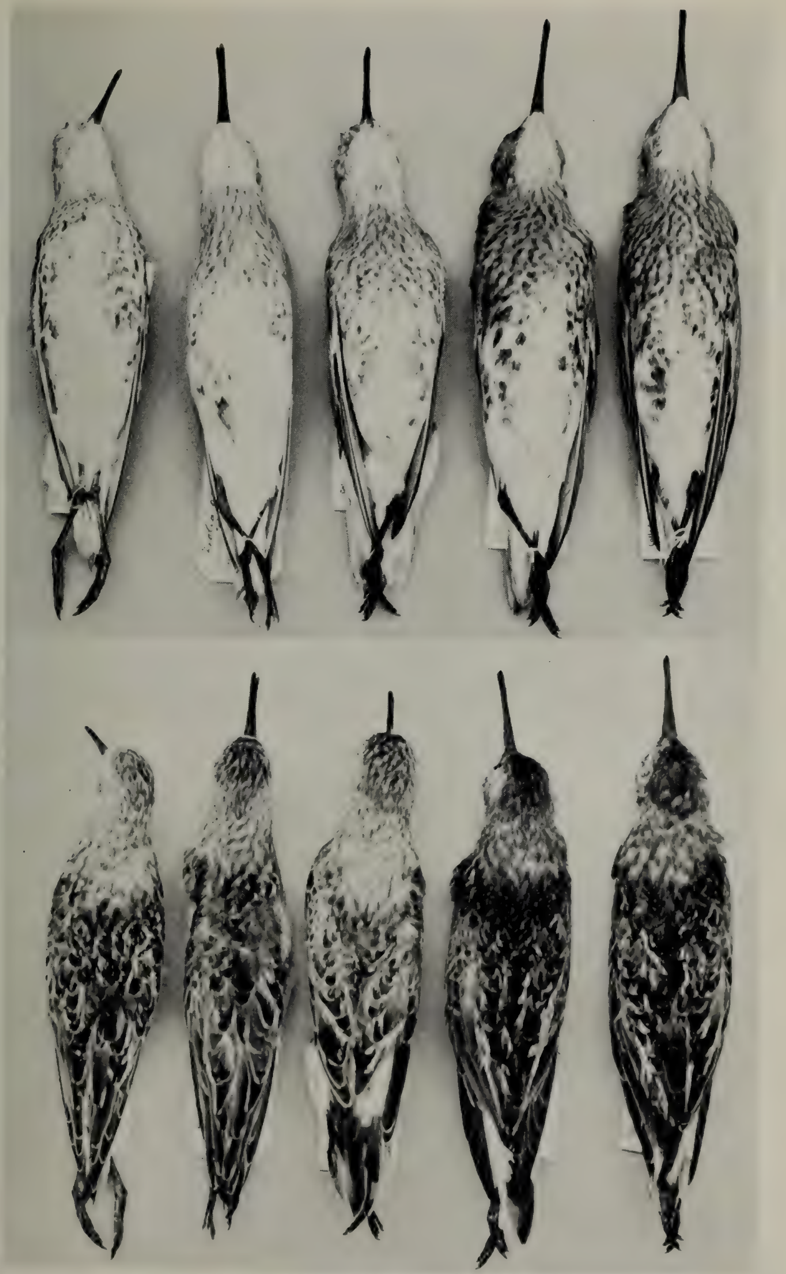
The following specimens in our collections from south-east England are, in our opinion referable to *C. a. arctica*:—

Bill (in millimetres)
(a) from anterior end of nostril, and
(b) from feather margin.

				(a)	(b)
Adults					
August	12	1909	♂ Rye Harbour, Sussex	22.5	27
May	14	1910	♂ Rye Harbour, Sussex	24	28
May	27	1943	♂ Cambridge Sewage Farm	23	28
May	25	1966	♂ Medway Estuary, Kent	21.5	25
May	24	1967	♂ Medway Estuary, Kent	20	24
June	7	1967	♂ Medway Estuary, Kent	20	25
July	7	1967	♂ Medway Estuary, Kent	22	27
August	8	1967	♂ Medway Estuary, Kent	23	27.5
Juveniles					
September	17	1896	♀ Rye Harbour, Sussex	24	27
August	22	1910	♂ Rye Harbour, Sussex	24.5	26
August	22	1910	♀ Rye Harbour, Sussex	24.5	26.5
August	30	1931	♀ near Deal, Kent	24	27
August	4	1967	♂ Medway Estuary, Kent	22.5	26
August	11	1967	♀ Medway Estuary, Kent	23	26
August	11	1967	♂ Medway Estuary, Kent	22.5	24

We have now to consider what value the bill measurements have under ringing conditions in the field as a means of determining Schiøler's Dunlin.

Conforming to the general rule in waders that females are larger than males, (based on the range of measurements given by Salomonsen (*loc.*



Photograph by Pamela Harrison

Three juveniles on left Schiøler's Dunlin from Kent and Sussex, two birds on right, juveniles from Iceland.

cit.), unfortunately only bill lengths, as taken from the feather margin, of less than 26 mm., can be provisionally assigned to *C. a. arctica*. We feel we should point out, however, that in a live bird the feather margin is capable of movement over the base of the bill, and obviously wear at the feather margin is also variable.

A measurement, on the other hand, taken from the anterior end of the nostril offers greater accuracy, but would demand extreme skill in anyone using this method on a live bird. Obviously then bill measurement must be correlated with plumage characteristics, which hitherto have not been fully appreciated. To the best of our knowledge Schiøler's Dunlin has not been described in its winter plumage, and our remarks can only be applied to spring adults and juveniles.

We are fortunate in having a series of bill measurements made available to us through Mr. W. F. A. Buck of the Mid-Kent Ringing Group and Mr. R. E. Scott of the Dungeness Bird Observatory.

The following bill measurements would appear to be probably referable to *C. a. arctica*:—

Mid-Kent Ringing Group: total number ringed and measured approximately 2,000, all caught on the North Kent marshes; of these only the following four can definitely be assigned to *C. a. arctica* on measurement from the feather margin:—

August 5th, 1964, juvenile, bill 25 mm.
September 3rd, 1964, juvenile, bill 24 mm.
August 28th, 1966, juvenile, bill 25 mm.
September 16th, 1966, juvenile, bill 25 mm.

In addition, a juvenile caught on August 19th, 1967 on the Swale Marshes, Kent, had a bill length of 24 mm. and its plumage was noted as being particularly pale.

Out of 62, ringed and measured at the Dungeness Bird Observatory, there was only one, a juvenile, September 5th, 1966, with a bill of 25 mm. It should be noted however that on the same date, an adult and another juvenile were trapped with bill measurements of 26 mm.; all were caught at the Wicks near Dungeness. This suggests that a small party of Schiøler's Dunlin was passing through.

Dr. Salomonsen (*in litt.* 17, vi. 67) has kindly given us the only four recoveries of this form ringed on the breeding grounds, as follows:—

Copenhagen Museum

Ring No.	*Ringing Data*	*Recovery Data*
755220	Scoresby Sound, N.E. Greenland August 14th, 1963. Adult.	Verdon-sur-Mer, France September 1st, 1963.
755226	Scoresby Sound, N.E. Greenland August 14th, 1963. Adult.	La Bassin, d'Arachon, France. September 11th, 1963.
755228	Scoresby Sound, N.E. Greenland August 14th, 1963. Adult.	Charente Maritime, France August 24th, 1965.
845810	Daneborg, N.E. Greenland July 6th, 1964, ? Adult.	Charente Maritime, France July 26th, 1965.

From these ringing recoveries and our specimens it would appear that Dunlin from north-east Greenland move south-westwards, through south-east England and along the French coast of the Bay of Biscay. These findings support Bannerman (1960 *loc. cit.*) who writes that "examples of this race (*i.e.* Schiøler's Dunlin) are almost certain to pass through the British Isles".

Our dates would suggest that this race passes through the British Isles on its northwards migration between 14th May and 17th June, while in autumn it has occurred between 7th July (adult) and 17th September (juvenile). It is of interest to note that out of eight Dunlin collected between 7th July and 18th August, 1967, four were typical of Schiøler's Dunlin; moreover between those dates, the maximum number of Dunlin seen on any one day was only twelve. The other four specimens were all *C. a. schinzii.*

It is of interest that the Mid-Kent Ringing Group has caught the majority of the 2,000 Dunlin between October and February, catching only one example between these dates with a culmen length of 26 mm., (26 x 66) and none which could be unequivocally assigned to the race *C. a. arctica.*

Discussion:

We must point out that the vernacular names of the races of this species have been both inaccurate and misleading. It has been quite erroneous to describe the *short-billed* Dunlin as the Southern Dunlin, for the shortest-billed race is, in fact, *C. a. arctica* one of the most northerly representatives of this species. We must add that the line figure to the Dunlin (scale 1 : 1) on page 238 of *The Handbook of British Birds* Vol IV, with the caption "Bill of ad. male Southern Dunlin (*Calidris a. schinzii*)", can be nothing other than *C. a. arctica.* The bill measurements of this figure from the anterior end of the nostril is 21.5 mm., and from the feather margin is 25.5 mm. It is therefore quite incorrect to refer to southern short-billed and the northern long-billed Dunlin.

A further possible cause of confusion is to be found in the distribution maps of the Dunlin races in Dementiev's *Birds of the Soviet Union* (1951, 3, p. 124) in which the form *C. a. arctica* is shown as breeding along the whole of the south-east coast of Greenland except for the extreme south, whereas Salomonsen (*loc. cit.*) has shown that the population of south-east Greenland belongs to *C. a. schinzii.* Similarly we would point out that the breeding form of Iceland is referable to this latter race, and not to *C. a. alpina.* This is comparable to the findings of Harrison (1944) on Redshanks, *Tringa totanus*, who showed that the Icelandic race *T. t. robusta*, is more closely related to the British race *T. t. britannica* than to the Continental nominate form, *T. t. totanus.* The difference here, is that the range of *C. a. schinzii* extends across the southern North Sea just into the European mainland north-westward into south-east Greenland.

It is not until north-east Greenland is reached that racial distinction occurs in the form of *C. a. arctica.*

It would seem that the spring plumage of Schiøler's Dunlin which tends to be so pale, could have a survival value in an area where summer snow is often persistent. The paleness therefore could provide protective coloration.

Another interesting feature of Schiøler's Dunlin is the short bill, a feature which finds a parallel in the shortbill of the Icelandic Black-tailed Godwit, *Limosa limosa islandica* compared with the nominate form *L. l. limosa.* One possible explanation of this might be that in north-east Greenland food is taken by shallower probings in the mud (owing to the presence of permafrost) than is the case in more southerly latitudes.

Also, this adaptation would appear to conform to Allen's Rule, which postulates that in arctic animals projecting body parts tend to be reduced, as a means of heat conservation. Freuchen and Salomonsen (1958) quote as a typical example Brünnich's Guillemot. *Uria lomvia*, and the high arctic race of the Black Guillemot *Cepphus grylle ultimus*, the bill of which averages 1.1 inches in length compared with 1.3 inches for the low arctic form, *C. g. arcticus*. Similarly the high arctic Fulmar, *Fulmarus glacialis minor*, has a much shorter bill than the nominate form from further south.

Summary:

The occurrence of Schiøler's Dunlin *Calidris alpina arctica*, as a passage-migrant in south-east England is described on specimens and from ringing measurements.

This race is new for the British Isles. Its characteristics are described and illustrated. Ringing records of birds from north-east Greenland show that this race also passes along the west coast of France in autumn.

It is pointed out that the vernacular names in use at present, *viz*: "Northern" and "Southern", "long-billed" and "short-billed" Dunlin have given rise to certain misconceptions to both taxonomists and field workers in this country.

In its morphology, Schiøler's Dunlin conforms to Allen's Rule, and as suggested by us, its pale spring plumage may be another survival factor. The winter plumage has yet to be described, and its winter quarters defined.

This paper is a preliminary to a more comprehensive review of the species and its races in the British Isles, (in course of preparation).

Acknowledgments:

Specimens mentioned in this paper as collected since 1954, were taken under licence granted to us by the Nature Conservancy, to whom we are indebted for these research facilities. We are most grateful to Mr. W. Mouland on whose ground the recent material was obtained.

We would like to thank Mr. J. D. Macdonald, of the British Museum (Natural History) for making available comparative material in the National collection. To Dr. Finn Salomonsen, of the Copenhagen Museum we offer our thanks for information concerning ringing recoveries of Schiløer's Dunlin, also to Mr. W. F. A. Buck of the Mid-Kent Ringing Group and to Mr. R. E. Scott of the Dungeness Bird Observatory, for further ringing and measurement data.

Finally we are most grateful to Dr. Pamela Harrison for the excellent photographs illustrating this paper.

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CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

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DINNERS AND MEETINGS FOR 1967

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The six hundred and forty-sixth meeting of the Club was held at the Rembrandt Hotel, London, on the 27th November, 1967.

Chairman: The Rt. Hon. the Lord Hurcomb.

Members present: 19; Guests 6.

Mr. Robert Gillmore gave a well illustrated talk on the subject of bird art and illustration.

The African Finfoot in Ethiopia

by C. W. Benson and E. Schüz

Received 13th June, 1967

The African Finfoot *Podica senegalensis* (Vieillot) is widespread in tropical Africa to as far west as Senegal, and extends outside the tropics into Natal and the eastern Cape Province (White, 1965: 107). But records by one of us (Schüz, 1967) from the upper reaches of the Blue Nile seem to be the first for Ethiopia. The purpose of the present note is to amplify these records.

While staying at Bahar Dar, on the south side of Lake Tana, from 5th to 18th April 1966, it was possible, thanks to Dr. F. Schäuffele who provided a motor boat, to explore the outlet of the Blue Nile from the south-east corner of the lake near the Debra Mariam lagoon to as far as the first small cataract, a distance of about two kilometres. In this area the river is much interrupted by islets. Large patches of papyrus and dense wooded vegetation alternate with rocks, the latter frequented by such species as *Phalacrocorax carbo*, *P. africanus*, *Anhinga rufa* and *Burhinus senegalensis*. The party, consisting of one of the authors and his wife (Mrs. Schüz), and Dr. Schäuffele, obtained clear views of African Finfoots swimming in open water between the rocks. On 8th April a female was seen, and on 17th April two males separately. One of the males was carrying a long leaf in its bill which it was thought might be for nest building. However, in the Transvaal Hosken (1966) has recorded the swallowing of leaves. The habitat in which finfoots were seen on the upper reaches of the Blue Nile was similar to that in which Schüz had previously observed them on the Zambezi near Livingstone, and in the Kafue National Park, Zambia, in July 1957. In particular, in all three localities there was the apparently essential requirement of a perennial river with a fringing dense woody cover.

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Chapin (1954) has discussed subspeciation in the African Finfoot. When specimens become available from the highlands of Ethiopia (unfortunately efforts by Dr. Schäuffele to obtain one were unsuccessful, owing to the difficult conditions), it may well prove that there is a distinct form in that region. The considerable degree of endemism in Ethiopian non-forest birds has been discussed by Moreau (1966: 220–221). Chapin (1954) gives no locality for the African Finfoot nearer to Ethiopia than the north-eastern Congo, Entebbe and the highlands of Kenya east of the Rift Valley. Cave and Macdonald (1955) give no record from the Sudan, though Pitman (1962) considers that it is probably widely distributed throughout Uganda. The Ethiopian population is probably quite isolated, due to lack in immediately adjacent territory of suitable perennial rivers or streams with a fringing dense woody cover. But presumably it is not confined to the upper reaches of the Blue Nile where the three birds which are the subject of this note were observed, but occurs elsewhere on that river, The right ecological conditions may also exist on other rivers in the Ethiopian highlands. The African Finfoot is easily overlooked, though "far from being as uncommon as is usually represented" (Percy, 1963: 127).

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Taxonomic notes on African Turdinae

by C. M. N. White

Received 26th April, 1967

These notes embody the results of studies of African Turdinae at the Cape Town Museum and National Museum, Bulawayo and amend my *Check List* of 1962. A few additional notes have been added to complete the addenda to the latter.

Cercomela familiaris (Stephens).

C. f. actuosa Clancey, 1966, Durban Mus. Nov. 7, p. 445. Matatiele, Drakensberg represents an intergrade from the nominate to *C. f. hellmayri* (Rchw.) and I would include it with the nominate form.

Cercomela tractrac (Wilkes)

C. t. nubilosa Clancey was listed in the addendum to my 1963 instalment of the *Check List*. Material now examined shows that it differs from *barlowi* in its redder rump and greyer, less white underside.

Myrmecocichla cinnamomeiventris (Lafresnaye)

The range ascribed to the nominate form should be reduced by the recognition of the two following forms.

T. c. autochthenes Clancey: smaller, male wing 102—111 mm. against 110—122 mm., with white breast band poorly marked or absent: female darker. Natal coast to east Swaziland and southern Mozambique.

T. c. odica Clancey (1962, Occ. Pap. Nat. Mus. S. Rhodesia, 26B, p. 743, Inyanga): like *subrufipennis* but female darker, less orange rufous below. Locally in Rhodesia to Victoria Falls and Gorongoza Mt., Portuguese East Africa.

Monticola explorator (Vieillot)

The species is monotypic and *tenebriformis* is not valid.

Monticola brevipes (Waterhouse)

The species is monotypic; further material does not support *kaokoensis*. *Monticola pretoriae* Gunning and Roberts (1911, Ann. Trvl. Mus. 3, p. 118. Pretoria).

Although generally placed as a synonym of *brevipes*, this is a valid species differing in having the crown and front grey and black on the face restricted to the lores. Mountains of central Transvaal to Woodbush, Swaziland, Natal, the Transvaal-Orange Free State borders and west to Magaliesberg and Zandriver mountains.

Monticola angolensis Sousa

Birds from Zambia, Rhodesia and Malawi are generally paler below, especially on the abdomen than those from the rest of the range, and have been named *M. a. hylophila* Clancey (1965, Durban Mus. Nov. 8, p. 16. Gokwe, Rhodesia). Irwin & Benson, 1966, Arnoldia, 2, no. 32, p. 11 suggest however that it should be called *M. a. niassae* Reichenow (1905, Vög. Afr. 3, p. 699. Nyasaland). Whilst the colour difference exists, the ranges of the two forms, if a subdivision is to be made, remain unclear as birds from the Katanga are reported to be identical with those of the Angola highlands. In addition it is fairly certain that birds found in Angola, the Katanga, Zambia and Malawi form a population continuum with no discontinuities. Birds from Zambia are variable in intensity of colour and Clancey assigned most of them to the nominate form, whilst Benson and Irwin consider that Zambian birds do not reach the intensity of Angolan birds. The evidence indicates a probable colour cline with terminal populations fairly distinct and a large intervening area more or less variably intermediate.

Cercotrichas leucophrys (Vieillot)

The poorly defined intergrade *C. l. makalaka* (Neumann) is best placed as a synonym of *pectoralis*.

C. l. simulator (Clancey) (*Erythropygia l. simulator*. 1964, Arnoldia, 1, no. 11, p. 7. Panda) is paler and greyer above than the nominate and whiter, less buffy below. It represents the population in coastal Mozambique, intergrading with adjacent *pectoralis*.

The question as to whether all the forms found in Kenya and Tanzania are in fact correctly placed as subspecies of *C. leucophrys* requires a fresh analysis since Ripley and Heinrich (1966, Postilla, no. 96, pp.17—18) have reported *C. l. zambesiana* and *C. l. brunneicepa* in close proximity but ecologically segregated in the region of Mt. Meru, Tanzania. They also show that these two forms are very well differentiated from each other. Possibly *brunneiceps* should be associated with *leucoptera*, also a bird of arid country and with a similar tail pattern, as separate species. Field studies are needed to elucidate the problem.

Cercotrichas quadrivirgata (Rchw.)

Having seen much additional material I am now satisfied that populations from the east Caprivi and Zambesi valley east to the Luangwa confluence and northwards in the range in Zambia are lighter and warmer above than the nominate and with a brighter, more orange rump, and should be recognised as *C. q. interna* (Clancey).

A further form has been described as *Erythropygia q. brunnea* Ripley & Heinrich (1966, Postilla, no. 96, p. 16. West of Lake Manyara, Tanzania) said to be darker and more olive-brown above than the nominate. Whilst this represents an extension inland of the species' East African range, and could even be a geographical isolate, its status remains uncertain as it was founded on only two specimens and geographical variation in this species is at best not strongly marked.

Cercotrichas signata (Sundevall)

An additional form described as *Erythropygia s. reclusa* Clancey, (1966, Durban Mus. Nov. 7, p. 460. Amatola Range, King William's Town), and said to be colder and duller above than the nominate appears to need further confirmation but may represent the end of a cline.

Cichladusa ruficauda (Hartlaub)

The range has recently been found to extend to the Kaokoveld, South West Africa.

Alethe anomala (Shelley)

A. a. grotei should stand as *A. a. albigularis* (*Callene albigularis* Reichenow 1895, Orn. Monats. p.87. Uluguru) a name not preoccupied by *Bessornis albigularis* Tristram.

Turdus libonyanus (Smith)

I do not now consider than *T. l. tropicalis* should be kept separate from the nominate form.

Turdus litsipsirupa (Smith)

Much additional material shows that *T. l. stierlingi* should be placed as a synonym of the nominate form.

Turdus camaronensis (Sharpe)

A population exists in the Ituri region of the north-east Congo and Bugoma in Uganda which is darker and less reddish above than the nominate, less olive below, with less marked pale loral patch and weaker bill. This is *T. c. prigoginei* Hall (1966, Bull. B.O.C. 86, p. 24. Moera) replacing *graueri* Sassi, 1914, preoccupied, and erroneously identified with *T. princei*.

Turdus spp.

T. gurneyi pilettei is now known to extend further south to Kamituga, Kivu, and *T. oberlaenderi* to extend to Kamituga and to Bwamba in Uganda.

On variation in *Nectarinia talatala* (Smith)

by P. A. Clancey

Received 4th September, 1967

The White-bellied Sunbird *Nectarinia talatala* (Smith) ranges from Angola, the southern edge of the Katanga, Zambia and southern Tanzania, south to the Transvaal and Natal. Van Someren (1921) and Roberts (1936) were among the first workers to record variation within the species; the former worker demonstrating a diminution in size and a bluing of the lustrous surfaces in northern Moçambique populations, while Roberts showed that northern South West African birds were on the whole shorter-billed than those of the Transvaal and Natal. Later workers have frequently expressed doubts as to the existence of subspecific difference in the species, and both Benson (1956) and Winterbottom (1966) aver that the species is monotypic, and that such differences as exist are vague and clinal in character.

A new study of a large panel of material in the Durban Museum suggests that recent doubts as to the polytypic status of *N. talatala* are not entirely well founded. In the White-bellied Sunbird geographical variation affects general size, as revealed by standard wing-, tail- and bill-measurements, the depth of the black breast-band in males, and the intensity with which the plumage, particularly in females is suffused with lipochrome. Study and evaluation of these variables is not simple, because not all populations breed and then moult at the same time of the year, there is much seasonal movement on the part of some populations and even individuals, and as is often the case, not all birds of single blocks of populations wear and fade at the same rate. When all lipochrome has been leached out of the plumage by the action of the sun and weathering, birds present a different aspect, especially on the underside, than when in fresh dress. Breeding birds are usually sullied and greyed below through contact with pollen and plant dust.

Variation follows a simple pattern common to many small passerines in southern Africa: small dimensions along the eastern seaboard and a demonstrable increase in melanin present in birds of the humid south-eastern highland system when compared with those of the drier sequence of biotopes in the interior and far west of the range. In agreement with other recent students, I find variation in bill-length not to be a particularly useful medium for arranging the populations into races, as the pattern described by this variable is irregular.

Eastern low country birds are consistently small-billed, but are not separable on this character from 50 per cent of those examined from the Rhodesian plateau, Zambia, northern Botswana and northern South West Africa. On the other hand, they are distinguishable at the conventional subspecies level from highveld Transvaal and Natal birds on the bill character. Wing- and tail-length measurements are of somewhat greater use in any projected subspecific arrangement, Zambesi valley and eastern littoral populations consisting of birds differing from interior and far western ones by about four mm. in either statistic. Eastern lowland *N. talatala* have wings in ♂♂ generally 51-56, tails 33-38, the plateau birds 57-61, tails 38-43 mm. However, a like diminution in size is found on the Angolan coast, where Benguela ♂♂ again have wings 52-56 mm. (after Benson). Clearly, size variables on their own are unsatisfactory media for any acceptable breakdown of *N. talatala* into racial taxa.

TABLE 1

Measurements of adult ♂♂ in mm. of selected populations of Nectarinia talatala.

	Population	*No.*	*Wing*	*Culmen*	*Tail*
			N. t. aresta		
1	Natal	10	55.5–59 (56.9)	23–25 (23.9)	36–42 (39.1)
2	Transvaal	10	56–61 (58.3)	23–24 (23.6)	38–43 (40.1)
			N. t. talatala		
3	Rhodesia (plateau)	10	57–59 (58.0)	21.5–24 (22.5)	38–41 (39.3)
4	N. Botswana	6	56–59 (57.4)	21–23 (21.7)	37–40.5 (39.1)
5	South West Africa	10	56.5–58.5 (57.7)	21.5–24.5 (23.0)	38–41 (39.4)
6	Zambia (except Zambesi and Luangwa valleys)	10	57–58.5 (57.5)	22–24 (22.8)	36–40 (38.5)
7	Zambesi R. valley (middle reaches, E. of Kariba)	10	52–56 (53.7)	21–23 (22.0)	33–37 (35.3)
8	S. Malawi & Moçambique littoral N. of Limpopo	10	51–56 (54.6)	20–23 (21.6)	35–39 (36.8)

Turning to colour as a means of arranging the populations into generally acceptable racial taxa, I find that males show little or nothing of moment on the upperparts. Eastern lowland birds separated as *N. t. lumbo* by Van Someren are not bluer on the upper tail-coverts and throat in freshly moulted dress than interior plateau specimens. Bluing of the dorsal peacock green is a phenomenon induced by actinic alteration of the refractive feather surfaces, and is common to all populations. Ventrally, one finds that males of all populations are delicately washed with pale primrose yellow over the abdominal surface when freshly moulted, this yellow flush disappearing gradually with the weathering of the plumage. What appear to be significent racial differences are, however, to be found in the intensity and depth of the black breast-band and the degree to which the body sides and flanks are washed or overlaid with olivaceous grey or brown. Males of the populations breeding in Natal and the Transvaal highveld, *i.e.*, over the south-eastern highlands of South Africa, are not only large and longest-billed (see Table 1), but differ from all others in having a more jet-black and deeper breast-band, with the ventral white duller and the sides of the body and flanks strongly washed with brownish. In the females of these same populations, the upperparts are darker and browner olivaceous, and the underside is darker over the throat and breast, the medio-ventral plane more strongly yellowish. Such populations appear to be partially migratory, judging by the presence of typical examples as far north as north-eastern Botswana (Goha Hills) and north-western Rhodesia (Nampini Ranch, West of Victoria Falls) between mid-March and September.

In order to test the validity of a belief that Transvaal highveld and Natal birds are partially migratory, I sorted out actual breeders taken in October and later on in the year. At this season colour leaching has eliminated any difference in the females of the various populations, but the black breast-band and ventral lateral overlay characters in males are usually still readily apparent. It was found that in all the breeding males from the central Zambesi River Valley, from which area a good panel of skins was available, the breast-band was not only much narrower but appreciably browner, less black, than in a like sample from the Transvaal highveld (Pretoria district) and Natal (mainly Pietermaritzburg).

These findings suggest that the frequent arrangement of the White-bellied Sunbird into two races has some acturality, but that the structural differences employed by workers to this end are inadequate, and that the colour characters outlined in the above discussion are more satisfactory. Most workers who have admitted two races apply *Cinnyris talatala* Smith, 1836: between the Orange River and Kurrichaine (*i.e.*, Zeerust), restricted to north-eastern Bechuanaland district, northern Cape, to the southern complex of populations, and *Nectarinia Anderssoni* Strickland, 1852: Damaraland, to the northern, following Roberts, (1936). However, examination of material from eastern Botswana and the dry western periphery of the Transvaal (Ellisras at 23° 55′ S: 27° 45′ E; Hanglipberg at 24° 20′ S: 28° 35′ E.) on the south-eastern edge of the South West Arid District reveals no palpable difference between it and specimens from populations present in northern Botswana, the Caprivi, and northern South West Africa, topotypical of *N. anderssoni.* I conclude that the names *talatala* and *anderssoni* apply to the same racial group of populations and are synonymous. Van Someren's *Cinnyris leucogaster lumbo*, described in 1921 from Lumbo, northern Moçambique, is not maintainable on the colour characters enunciated in the original description, these being simply the result of actinic bluing of the metallic feathering in the small sample available of what he took to be nominate *C. leucogaster* (=*N. talatala*). The populations named *lumbo* do range smaller in critical measurements than most plateau birds, but similarly small birds extend into northern Botswana via the Zambesi River Valley and also occur along the Angolan coast. As indicated above, it seems best to disallow *lumbo*, and place this name in the synonymy of *talatala* along with *anderssoni.* One other name remains to be considered, that being *Nectarinia talatala aresta* Clancey, 1962; Eshowe, Zululand. The *Type* is a typical male of the southern form with a deep black breast-band, a strong brownish wash to the flanks, and the bill is long (24+ mm.). This name can be adopted unequivocally for the southern race.

The names, characters and ranges of the two races of *N. talatala* are as hereunder detailed:

Nectarinia talatala talatala (Smith).

Cinnyris talatala A. Smith, *Rep. Exped. Expl. Centr. Afr.*, 1836, p. 53: country between Orange River and Kurrichaine, restricted to north-eastern Bechuanaland district, northern Cape, by Clancey, *Durban Mus. Novit.*, vol. vii., 13, 1966, p. 558.

Nectarinia Anderssoni Strickland, in Jardine's *Contr. Ornith.*, 1852, p. 153: Damaraland, South West Africa, but *Type* perhaps from Okavango River.

Cinnyris leucogaster lumbo van Someron, *Bull. Brit. Orn. Cl.*, vol. xli., 1921, p. 113: Lumbo, northern Moçambique.

Male in newly moulted dress metallic Peacock Green (Ridgway, 1912) above, bluing over the upper tail-coverts. Below, with blackish-brown band across breast caudad to the metallic Ethyl Blue and violet plastron 5-7 mm. deep laterally; rest of underside white, flushed medio-ventrally with Naphthalene Yellow.

Female Olive-Citrine above. Below Naphthalene Yellow, streaked with greyish-brown on throat and breast, and flanks washed with same.

Measurements: As given in Table 1.

Material: 260. (South West Africa, 22; Botswana, 12; Zambia, 32; Rhodesia, 131; Moçambique, 22; Malawi, 5; West and East lowveld of Transvaal, 14; East Swaziland, 15; East Zululand, 7).

Range: Angola in the south and south-west, the northern half of South West Africa, including the Caprivi Strip, northern and eastern Botswana, north-eastern Cape, western and eastern Transvaal, Rhodesia, Zambia, southern Katanga, in the Congo, Malawi, southern Tanzania, Moçambique, eastern Swaziland, and the eastern plain of Zululand.

Remarks: A male from Mazabuko, dated 21st May, 1949, in the collection of the National Museum of Rhodesia, Bulawayo, N. M. Reg. No. 1361, with an orange suffusion to the pectoral tufts and incipient orange or red breast-bar below the black, appears to be the first record of a *N. talatala N. oustaleti* hybird.

Nectarinia talatala aresta Clancey.

Nectarinia talatala aresta Clancey, *Durban Mus. Novit.*, vol. vi., 15, 1962, p. 190: near Eshowe, Zululand.

Male as in *N. t. talatala*, but often more reddish-violet over caudad half of plastron (Amethyst Violet); black breast-band more jet, and deeper—*c*. 10-15 mm. deep laterally; white of underside duller, and medio-ventral plane greener yellow (Pale Greenish Yellow); sides of body and flanks washed and somewhat streaked with olivaceous brown, not almost white as in nominate *N. talatala*. Bill averaging longer.

Female darker and browner above (Brownish Olive). Below, darker and browner over throat and breast, and abdominal surface deeper yellow (Primrose Yellow); flanks darker and overlaid with light olive-brown.

Measurements: As given in Table 1.

Material: 72. (Transvaal highveld, 24; Natal, 22; western Zululand, 6; Swaziland, 3 (wintering); Rhodesia and Botswana, 17 (wintering)).

Range: Breeds in the acacia savannas of the highveld of the Transvaal, south to western Zululand and Natal. High elevation populations tend to move north and east during the cold, dry winter months, and then recorded Swaziland, Rhodesia and even Botswana. Well marked males of this race recorded from Rhodesia were taken at Sentinel Ranch, Limpopo River, 8th May and 30th June; Bulawayo 11th March and 14th August; Sabi/Lundi confluence, 8th June; Birchenough Bridge 4th and 14th July; Nampini Ranch, West of Victoria Falls, 31st August. The single Botswana record: Goha Hills 21st September.

Remarks: Females in breeding dress retain much of the dark colour of the upperparts, but lose the yellow below, becoming whiter. They are, not, however, always separable from females of *N. t. talatala* when in worn dress.

ACKNOWLEDGMENTS

To augment the series in the Durban Museum, additional material was borrowed from the South African Museum, Cape Town, the State Museum Windhoek, the Natal Museum, Pietermaritzburg, the Transvaal Museum, Pretoria and the National Museum of Rhodesia, Bulawayo. To the responsible officials I tender my thanks.

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Breeding biology of *Lamprotornis mevesii* (Wahlberg)

by R. J. Dowsett

Received 2nd April, 1967

Brooke (1965) has summarised what is known of the breeding of the Long-tailed Starling *Lamprotornis mevesii* (Wahlberg), but he is able to give no information on incubation and nestling periods. The present paper records the nestling period and the growth of nestlings observed in a nest at M'fuwe, Luangwa Valley, Zambia (13° 05′ S: 31° 50′ E), in March, 1966. This nest is the first to be found in Zambia (Brooke, *op. cit.*). Nest excavation, as observed in the same area in February, 1967, is also described. The species is numerous on alluvial soils in the Luangwa Valley, mainly in *Colophospermum mopane* Leon. woodland, but the area is difficult of access in the rains when the species is breeding.

Nest excavation

On 11th February, 1967, a pair of *L. mevesii* started excavating a hole in a *Kigelia pinnata* tree, only some 10 feet from the tree in which they had nested in March, 1966. They were considered to be the same pair that had nested before, the presumed male having been caught and ringed in March, 1966 and the presumed female being unringed. When the male visited the nest-hole the number on his ring could be read clearly through a x40 telescope. The hole was a natural one and was in the side of an almost vertical branch, some 12 feet above the ground. The hole was about six inches deep and contained rather loose and rotting wood.

Excavation was daily, but was casual and mainly between 0700 and 1000 hours local time. Only the female was seen to excavate. The male usually sat higher up in the tree, and would call when the female entered the nest-hole, often flying down to peer in when she was inside. Sometimes he would fly away with her when she left the hole with wood-chips, which she usually carried in her beak for about 25 yards. On 16th February, she started carrying a few twigs into the hole, but she was still occupied with excavation. On one occasion the male carried a large chip of wood into the hole, only for it to be removed promptly by the female on her next visit. The male seldom entered the hole, and was never again seen to carry anything.

From 18th February another starling joined the male of the pair, and it was found to be one of the chicks hatched by this pair in March, 1966 (it had been ringed). For the next few days the youngster joined the male in encouraging the female, but doing little else. It was tolerated by the pair, unlike Red-billed Wood-hoopoes *Phoeniculus purpureus* (Miller) and a Striped Kingfisher *Halcyon chelicuti* (Stanley) which visited the hole only to be chased off by the pair of starlings.

The female continued to excavate and to take in a little nesting material until 24th February when all three birds unaccountably left the area and were not seen again.

Description of nest

The nest found in March, 1966 was made solely of dead fibre and twigs in a hole in a live Cape Mahogany tree *Trichilia emetica* Vahl. The nest chamber was 12 inches deep in the side of a dead branch, eight feet from the ground and at an angle of 45° from the horizontal. There were two entrance holes, the lower one in the side of the branch about four feet up from the tree trunk, the other a further three feet up, beneath the branch. The holes were apparently natural. Both entrances faced approximately west, but this is probably of little significance as a grove of trees provided day-long shade.

Description of nestlings

Two nestlings were examined from the nest on 19th March when they were considered to be one day old (fig. 1). They were naked except for dirty white down on crown, sides of neck and, especially abundant, down the spine. They seemed just able to distinguish light from dark. The gape was bright yellow, but with age this became duller. Nestlings of the closely

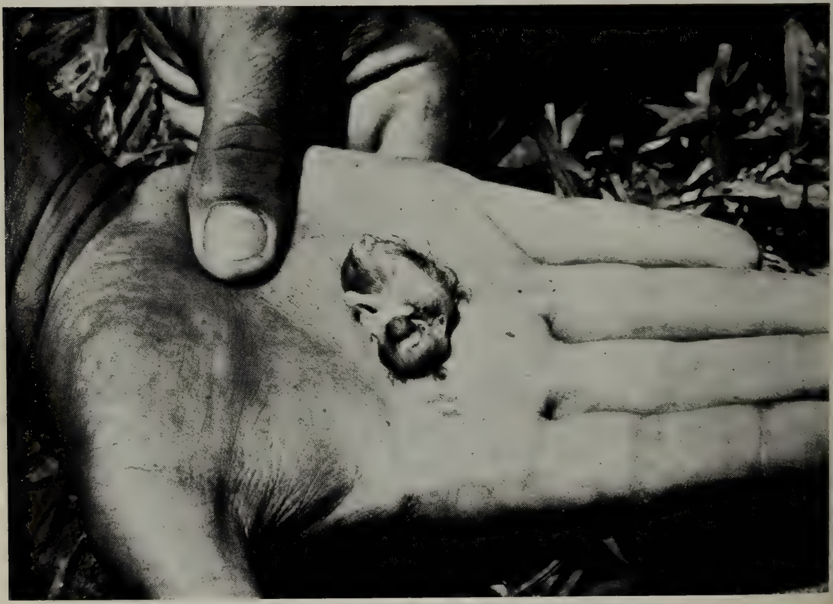

Fig. 1. *Lamprotornis mevesii* chick one day old

related *L. australis* (Smith) at about four days old had dull yellow gapes (Benson and Pitman, 1966). The prominent gape flange was whitish.

To avoid undue disturbance the nest was not examined closely again until day six (fig. 2). A third nestling was then found in the nest, and it was either hatched several days after the other two or was retarded in its development, as it remained much smaller than the others throughout the nestling period (fig. 3 taken on day seven).

The pterylosis of this small individual was examined on day ten. Spinal, femoral, humeral, crural, ulnar and ventral feather tracts were present. The inner and outer supraorbital and occipital tracts were poorly defined, most feather development on the sides of the head radiating from the crown (continuation of the spinal tract) and malar region.

Growth of nestlings

All three nestlings were weighed and measured daily, between 1400 and 1600 hours local time, from day seven until day 16, when examination was stopped to avoid premature flight from the nest. Fig. 4 shows the youngest nestling and one of the older ones on day 14. All three finally left the nest on 9th April at 22 days old.

Wing length and weight increases are shown in fig. 5. Data are compared with the measurements of seven birds of the year and seven adults caught and ringed in the same area in October, 1966. In addition one of the nesting adult *L. mevesii* which was caught and ringed on 17th March, about the time of hatching (it was not then known there was a nest in the same area) had a wing of 145 mm. and a weight of 81.5 gms. This adult was probably the male as its wing length is within the range for male specimens from the Luangwa Valley (Irwin and Benson, 1967). It

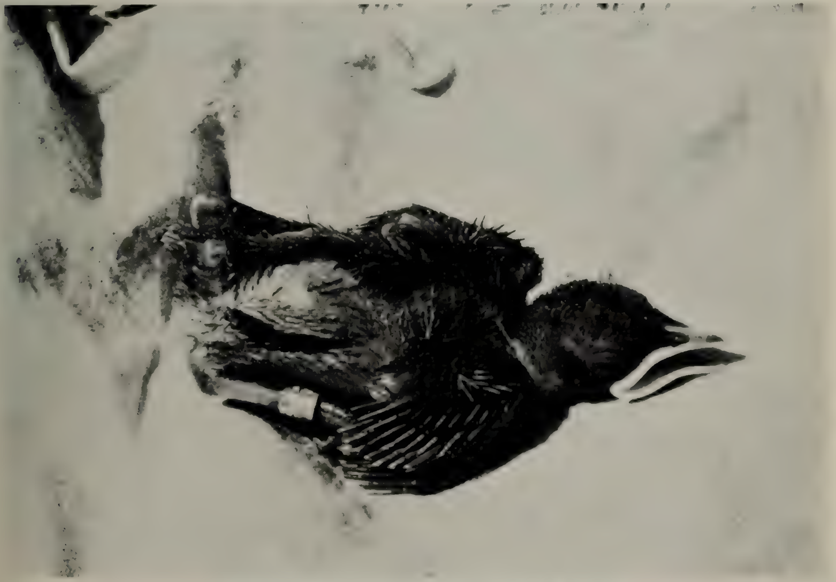

Fig. 2. *Lamprotornis mevesii* chick at day six

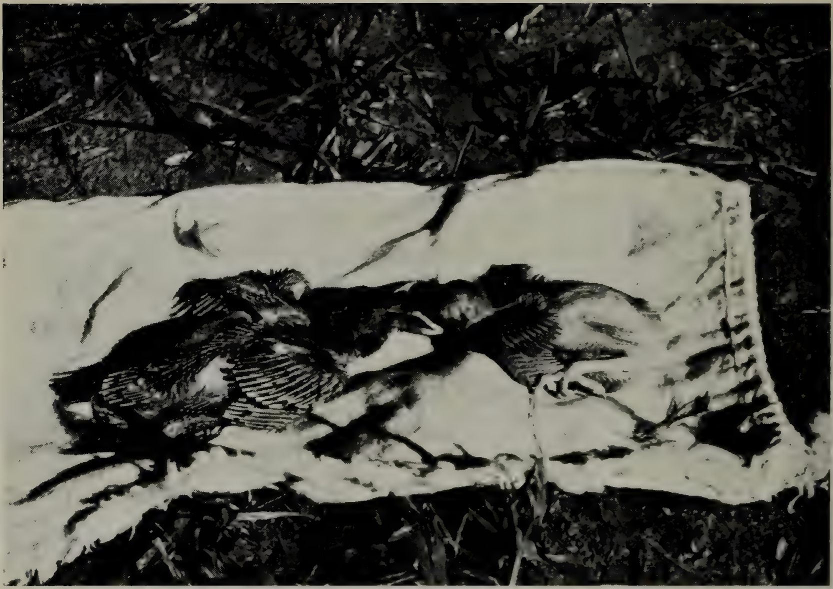

Fig. 3. *Lamprotornis mevesii* chicks at day seven

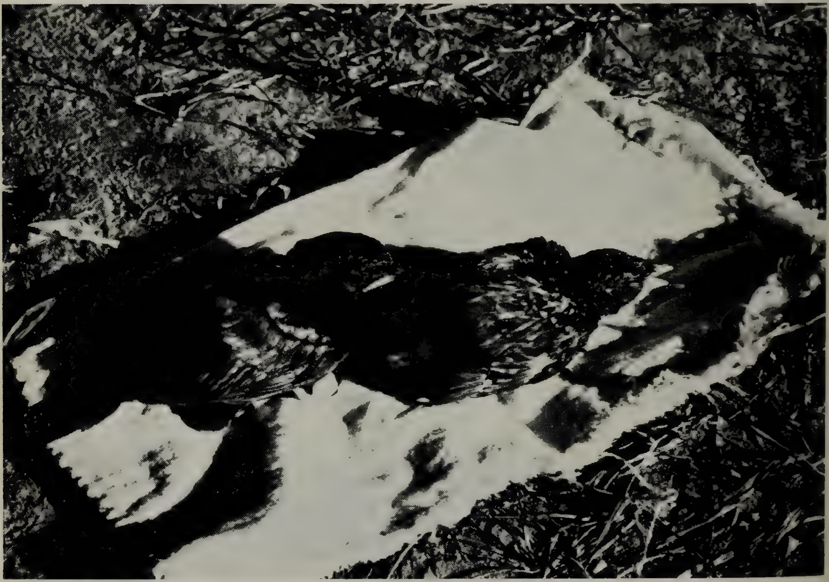

Fig. 4. *Lamprotornis mevesii* chicks at day 14

did not appear to brood the nestlings, although it was seen to feed them as much as the unringed bird of the pair. Fig. 5 also includes data from an independent juvenile collected from a party on 19th June. It will be seen that growth was steady throughout the period of observation, but that near adult weight was reached earlier than near adult wing size, and that at the time of fledging the wing had still to grow a good deal.

The growth of the bill, tarsus and tail is shown in fig. 5, the data being compared with the measurements of the birds caught in October. As the base of the bill and forehead are ill-defined in young birds, bill measurements were taken from the nostril. The bills of the October sample were also measured from the skull in the normal manner, results being:

	Range	*Mean*	*Sample*
Adults	21.5—22.5 mm.	22.0	7
Birds of the year	20.5—23.0 mm.	21.5	7

The tails of two adults were heavily abraded and are not included in fig. 5. The tarsus, but not the bill, appears to be fully developed at an early age, whereas tail growth continues well after fledging (see Saunders in Brooke, 1965).

Wing feather quills were evident by day six, and by day eight the primaries were emerging. By day nine femoral, ventral (slight) and ulnar tracts were sprouting, and the emergent feathers were glossy blue-green. By day ten the quills of all feather tracts were sprouting. The smallest nestling's development was some two or three days behind this. In all nestlings the last areas to be covered by feathers were the sides of the breast, from belly to neck, which remained bare to at least day 16. By day 16 the colour of the nestling's plumage was very similar to that of the adult, being slightly blacker, less glossy at the base of feathers. Benson (*in litt.*) kindly gives information on the three specimens collected by Ansorge at Mossamedes, Angola, on 22nd April, 1906 and mentioned by Brooke (1965). They have wings of 105, 105 and 99 mm. and tails of 59, 50 and 57 mm. All are fully feathered and the colour of adults, except that the belly, rump and upper tail-coverts have reddish rather than bronzy iridescences, which is in accordance with the findings of Brooke (1967). Benson considers there are also slight indications of buffy tips to the chest feathers. These specimens are in the American Museum of Natural History, where Benson examined them.

The colour of the tarsus was originally off-white or leaden, but slowly darkened in blotches to blackish. The whitish bill darkened slowly, at first the upper mandible only. The eye was brown with a dark blue centre as in adults.

Weather appeared to have no effect on daily growth rates. The nestlings seemed to be fed entirely on insects and caterpillars which were readily available.

Nestling parasites

Mites were present on the nestlings and in the nest in very large numbers from day 15 but not prior to that. Specimens have been identified as the Tropical Fowl Mite *Ornithonyssus bursa* (Berlese), family Dermanyssidae, by the British Museum (Natural History). This is a widespread tropical species that parasitizes both wild and domestic birds. Several of the birds

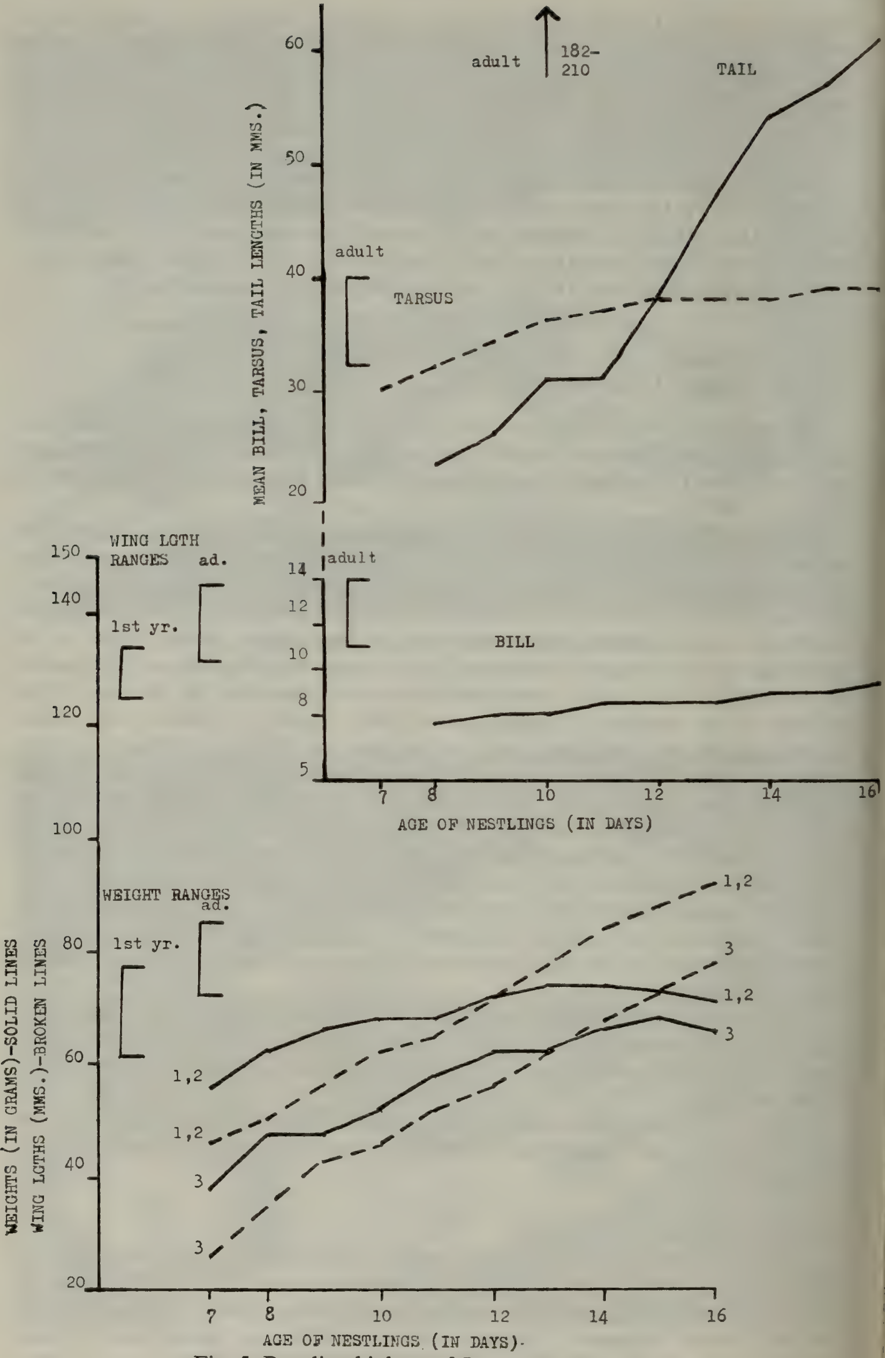

Fig. 5. Breeding biology of *Lamprotornis mevesii*

caught for ringing in October carried a large number of apparently similar mites, but none was collected.

Behaviour during the nestling period

Both adults fed the nestlings, but only the unringed bird (presumably the female) was observed to brood them, although too little time could be spent observing this nest for firm conclusions to be drawn. This pair may have nested unobserved prior to the present occurrence, but Brooke (*in litt.*) considers the species probably single brooded as it has a relatively long nestling and a very long fledgling period. A fledgling collected by M. P. Stuart Irwin near Nuanetsi, Rhodesia, on 27th April was still being fed by its parents although it had a fully grown tail and only a trace of gape flange. This specimen is now in the National Museum, Bulawayo, Rhodesia (Brooke, 1967 and *in litt.*). The present pair left the immediate vicinity after the young left the nest and their movements thereafter could not be followed, although it is known one of the fledglings was in the area in October (see *Post-breeding behaviour*).

The adults entered the nest by the main entrance hole beneath the branch, the one further away from the nest. They entered the top hole head first, and passed by the bottom hole head first, evidently turning around in the nest chamber before brooding or after feeding (*cf.* Cackett in Brooke, 1965). The diameter of the nest cavity was about seven inches. When the nestlings were removed from the nest for examination the adults merely scolded from a distance; only on day 16, the last day of examination, did the adults mob the observer and that was when the largest nestling left the nest prematurely. This pair showed the noisy intolerance of other species near the nest which is typical of *L. mevesii* in the Luangwa Valley, where several obvious pairs have been noted, although nests not found (*cf.* Cackett in Brooke, 1965). On one occasion both adults mobbed an Angola Kingfisher *Halcyon senegalensis* (Linn.) that ventured too near the nest. In February 1967 a starling, not one of the pair under observation, was seen to mob a Great Spotted Cuckoo *Clamator glandarius* (Linn.), a species that may well parasitize *L. mevesii* in this area (see footnote to Brooke, 1967).

The nestlings called whilst being fed, or when disturbed in the nest, from day 1. A quiet "cheep, cheep" became louder and harsher as they grew older. Bill-snapping when disturbed in the nest commenced on day 14. The two larger nestlings were always nearer the lower entrance hole than the smaller one, and presumably were fed before it was. From day 15 the two larger nestlings at least climbed to this entrance hole to defaecate from it. The largest left the nest of its own accord on day 16, but was returned as it could fly but weakly, From day 19 the two larger nestlings at least spent a lot of their time at the lower entrance hole, and all three left the nest and its immediate vicinity early on day 22.

Post-breeding behaviour

In early October a flock of about 40 *L. mevesii* appeared in the vicinity of the nest and fed for several days on the fallen ripe fruits of the tree *Diospyros mespiliformis* Hochst. Fourteen were caught and ringed and their measurements have been used earlier in this paper. One of the fledglings was seen in this flock (it was the only one to be ringed on the left leg) but it could not be recaptured. This was the same bird that appeared in the area again during nest excavation in February, 1967. The birds caught were aged by the presence or absence of copper iridescences on the flanks (see Brooke, 1967). Five adults had commenced the moult of their primary feathers, whilst two had fairly unworn primaries with no trace of moult. All seven had fairly fresh secondaries. The seven considered to be birds of the year were all in a state similar to that of the moulting adults. The breeding adult caught and ringed on 17th March showed little plumage wear, and Brooke (1967) has shown that the species has a complete prenuptial moult.

Two birds of this party were observed copulating on 6th October, but not subsequently (see Cackett in Brooke, 1967).

Outside the breeding season *L. mevesii* seems to feed to a great extent on fruits, which are most plentiful at the end of the dry season, say October to December. A flock of 150 seen in the Luangwa Valley on 17th July were feeding in *Acacia albida* Del. trees, apparently on the flowers, but possibly also on tender young fruits. My colleague W. L. Astle tells me he can think of no fruiting trees that would be available to *L. mevesii* during the breeding season in the Luangwa Valley, and observations at this nest confirm that the species is then mainly insectivorous.

ACKNOWLEDGMENTS

C. W. Benson and R. K. Brooke gave much assistance in criticising an early draft of this paper. R. D. Rohwer, Jnr. helped locate the 1966 nest. Dr. G. O. Evans and K. H. Hyatt kindly identified the mites.

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Brooke, R. K., (1965). On the breeding of *Lamprotornis mevesii* (Wahlberg) *Bull. Brit. Orn. Cl.* 85 (8): 139-141.

— (1967). On the moults and breeding season of the Long-tailed Starling *Lamprotornis mevesii* (Wahlberg). *Bull. Brit. Orn. Cl.* 87 (1): 2-5.

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An unusual record of the Golden Pipit *Tmetothylacus tenellus* (Cabanis)

by B. W. H. STRONACH

Received 15th July, 1967

In February, 1967, three male Golden Pipits (*Tmetothylacus tenellus*) were collected at Mweka, northern Tanzania (3° 15′ S., 37° 20′ E.). Mweka is situated at 4,500 ft. on the southern slopes of Mt. Kilimanjaro, about eight miles north of Moshi.

This is the first record of this species at Mweka and an unusual one in that these birds are usually found in very dry semi-desert country with a rainfall of about 15 inches per annum, whereas the vegetation at Mweka is described as the lower edge of the montane forest and has a rainfall of 45 inches per annum.

Over the past three years frequent visits have been made to the Tsavo (west) National Park in Kenya (3° 5′ S., 37° 50′ E.), at all seasons of the year and it was found that these pipits were present there in large numbers in April, May and June but in the early or later months of the year very few of them were recorded. The occurrence of these birds at Mweka could mean that they undergo a local migration but where they actually move to and from is not known. They certainly appear to breed at Tsavo as their courtship flights were seen frequently.

A new subspecies of *Apalis rufogularis* (Fraser) from Uganda

by STUART KEITH, ARTHUR TWOMEY AND HERBERT FRIEDMANN

Received 21st August, 1967

The authors have recently been involved in collecting and studying the birds of the Impenetrable Forest, Kigezi, south-west Uganda. Twomey collected in the forest in 1960, Keith in 1962 and Friedmann has received specimens collected for the Los Angeles County Museum in 1966. Many birds were discovered which were not previously known from Uganda, and a full report on the avifauna of this forest is now being prepared by the authors. In the meantime, since we have discovered only one subspecies from the forest which seems worth describing, we considered it advisable to publish this description separately.

The bird we propose to name is

Apalis rufogularis kigezi, subsp. nov.

Type: Carnegie Museum No. 141190; adult male; Impenetrable Forest, Kigezi, Uganda, 5,000 feet; 7th August, 1960; Arthur Twomey, collector.

Measurements of type: Wing 49; tail 48.

Description: Upperparts considerably greyer, less brown, than in males of *A. rufogularis nigrescens.* A second male, obtained by Friedmann's collectors, is similarly grey above. These two birds were compared with a long series of *A. r. nigrescens* at the American Museum of Natural History, and with a fresh specimen of *nigrescens* taken by Twomey in Kakamega Forest, Kenya. The fresh bird showed no difference in colour above from the older specimens in the A.M.N.H. so the colour difference cannot be due to ageing. The underparts of the Impenetrable Forest birds are much whiter than in the older A.M.N.H. birds, without any buffy wash, but the fresh bird from Kakamega, which is definitely *nigrescens*, is similiarly white, so it would seem that a buffy wash on the underparts is acquired with age.

Three females of this new race were collected in the same locality, and these also differ from females of *Apalis r. nigrescens.* They are grey on the head and mantle instead of brown. The amount of green on the back of females of *nigrescens* is variable, and variation also appears in *kigezi*, one of the females having only a trace of green on the back. On the underparts, females have much less rufous than females of *nigrescens*; the rufous colour of the throat only just reaches the breast, whereas in females of *nigrescens* the rufous is more extensive, often reaching to the belly.

Distribution: Only known from the type locality. The race *nigrescens* ranges from western Kenya through Uganda to the eastern congo, south through the Kivu to Katanga and Mt. Kabobo. Populations from the forests of Kenya, Uganda and the Congo, though discrete, have not been separated and specimens from the A.M.N.H. collection from these countries bear out this treatment. It is therefore somewhat surprising that the Impenetrable Forest should contain birds which appear different. Perhaps further collecting in the montane forests of eastern Congo and Rwanda will show that *Apalis rufogularis kigezi* is more widespread. It is noteworthy that White (1962) states that populations of *nigrescens* in the south-west part of its range have females lighter and more grey-brown above, which may be a distinct form. This would, however, be many hundred miles from the territory of *A. r. kigezi* and in between the two occur birds assignable to *nigrescens*.

Our thanks go to John Williams and Tony Archer for actual collection of specimens of this new race.

Reference:

White, C. M. N., 1962. A Check List of the Ethiopian Muscicapidae (Sylviinae). Part III. *Occasional Papers of the National Museums of Southern Rhodesia*, vol. 3, No. 26b, pp. 653-694.

A new race of the Little Bee-eater from the South West Arid District of Africa

by P. A. Clancey

Received 5th September, 1967

Studies of variation in the southern African populations of the Little Bee-eater *Merops pusillus* Statius Müller carried out over the past few years have culminated in a decision to recognise two races in this region, one of which requires a name:

Merops pusillus argutus, subsp. nov.

Description: Similar to *M. p. meridionalis* (Sharpe), 1892: Pinetown, Natal, but separable on the basis of a paler, less saturated, olive-green dorsal surface. Below, yellow of throat paler and gular spot much smaller, this more laterally compressed and sagittate or rounded in form; blue edging to the anterior plane of the gular spot caerulean rather than ultramarine; upper breast and sides of lower throat paler reddish brown [Ochraceous-Tawny (Ridgway, *Color Standards and Color Nomenclature*, 1912, pl. xv.), as against Hazel (pl. xiv)], and rest of underside much lighter and less washed with saturated golden olivaceous in newly moulted condition. Similar in size.

Distribution: The northern and north-eastern periphery of the South West Arid District from south-western and southern Angola, northern and north-eastern South West Africa, east to Ngamiland and northern and north-eastern Botswana (in south-east to the Tuli River), extreme western Matabeleland, Rhodesia (especially at Wankie and Kazungula), and south-western Zambia; also perhaps to the north-western Transvaal. There may be a temporary seasonal shift to the east on the part of some individuals or marginal populations, as a ♀ from Newington, in the eastern Transvaal lowveld, dated 5th August, 1953, is typical of this dry country form.

Type: ♂, adult. Nata River, Nata, north-eastern Botswana (Bechuanaland Protectorate). 11th August, 1966. Collected by Peterhouse School Nat. Hist. Soc. In the National Museum of Rhodesia, Bulawayo. N. M. No. 60631.

Measurements of the Type: Wing 81 (tip missing), culmen (from base) 30.5, tail 62 mm.

Material examined: M. p. argutus, 23 [South West Africa, 6; Botswana, 6

(Shakawe, near Muhembo, Kwikamba, Nata, Kasane); western Rhodesia, 10 (mainly Kazungula); Transvaal, 1 (Newington)]. *M. p. meridionalis*, 70. *M. p. cyanostictus*, 9.

Remarks: By September, birds of all the southern African populations of this bee-eater are too blued above and weathered to be of such use in work, on subspecification, though the throat-spot variable is unaffected. I have based my conclusions on the adequate samples taken between May and August which presently lie before me.

With the recognition of *M. p. argutus*, the South African range of *M. p. meridionalis* will now be: coastal Natal, eastern Zululand, eastern Swaziland, the Transvaal, Rhodesia (except extreme west), and Moçambique. Farther north extends to Tanzania, parts of Kenya, Uganda, Malawi, Zambia (except south-west), the southern and eastern savannas of the Congo, Angola north of *M. p. argutus*, and the Portuguese Congo.

For the loan of material to augment that in the Durban Museum, I am grateful for assistance rendered by Mr. M. P. Stuart Irwin, Ornithologist of the National Museum of Rhodesia, Bulawayo, and Professor J. M. Winterbottom, Director of the Percy FitzPatrick Institute of African Ornithology, in Cape Town.

Taxonomic notes on some African Sylviinae

by C. M. N. White

Received 26th April, 1967

The present notes form part of a series as already explained in some earlier contributions.

Euryptila

In my *Check List* (1962) I placed this genus after *Camaroptera* but expressed uncertainty as to its affinities. Recent field data, I am informed, suggests that it is very like *Camaroptera* and that it could be merged with that genus.

Eremomela icteropygialis (Lafresnaye)

In view of the various conflicting views about the variation in this species in its south-western range, I have examined material again. I agree with Clancey (1962, Bull. B.O.C. 82, pp. 44–45) that there is no convincing reason for rejecting the lower Orange River as the type locality, and that *perimacha* must become a synonym of the nominate form. I am however doubtful about recognising *E. i. sharpei* Rchw. for birds from northern South West Africa and most of Botswana. Some material seems to exhibit differences whilst other does not. For instance I cannot see any constant differences between birds from the north-west Cape Province and a series from Ovamboland. Specimens from the Kaokoveld are paler below and have very little yellow on the abdomen. Wear and abrasion is also rapid in these areas which makes comparison difficult. At present I therefore prefer to unite these populations.

Eremomela scotops Sundevall

I am now satisfied that the populations which in 1962 I united under the nominate consist of three subspecies. *E. s. chlorochlamys* Clancey (1965, Arnoldia, 2, no. 3, p. 2. Sabi-Lundi confluence) has a brighter and yellower crown, and a more pronounced citrine wash on the grey upper surface, and is the form of coastal Natal north to Beira in Mozambique and inland to south-eastern Rhodesia. The populations of East Africa north of this new form must be known as *E. s. occipitalis*. They are identical with the nominate form in colour but have shorter tails, 40-43.5 mm. against 45–51.5 mm. Although this form is very slighty differentiated, it seems clear that it is not actually in contact with the nominate form.

Additional material does not confirm *E. s. extrema* White which must be placed as a synonym of *pulchra*.

Sylvietta virens Cassin

The range of the nominate form extends further south into north-east Angola. The recently described *S. v. meridionalis* Ripley & Heinrich (1966, Postilla, no. 95, p. 20. Calulo, Cuanza Sul, Angola) merely continues the characters of *S. v. tando* of north-west Angola by being still whiter on the abdomen and lighter reddish-brown on the throat and chest. The describers remark that *tando* represents an intergrade and would have been better not named. The recognition of how many segments of a cline to name is arbitrary and hence so too is formal recognition of this new form.

Parisoma subcaeruleum (Vieillot)

In south-west Angola the inland birds agree best with *cinerascens* and the small and pale *ansorgei* should be limited to the coastal lowlands north to Benguella.

Parisoma layardi Hartlaub

Examination of a good series confirms the validity of the pale *aridicola* Winterbottom but I cannot distinguish *P. l. subsolana* Clancey (1963, Durban Mus. Nov. 6, p. 253. Molteno, eastern Cape Province) from *aridicola*.

Partial albinism in *Vanellus armatus*

by R. K. Brooke

Received 19th August, 1967

Tree (*Ostrich* 1966 p. 238) mentions a partially albino Blacksmith Plover *Vanellus armatus* (Burchell) in the collection of the National Museum, Bulawayo. Through the courtesy of the Curator and of the Ornithologist there, Mr. M. P. Stuart Irwin, I was recently able to examine this specimen which proved to be more interesting than Tree had suggested. It is unsexed; for reasons to be given below it is probably immature; it was collected in February, 1959 on the Sabi River at Chisumbanje in Rhodesia (20° 50′ S: 32° 15′ E). As in *Pycnonotus barbatus* (Desfontaines) Brooke *Bull. Brit. Orn. Cl.* 1965: 114-115) the coloured parts of the plumage are apparently produced by the complementary actions of two melanins with separate genetic controls. In this specimen the dominant or principal melanin is missing. As a result the black parts of the plumage are deep brown, the grey parts are a faint pinkish-brown and the white parts remain white. The spurs are short suggesting immaturity and colourless horn instead of black. There are no statements of colour of the soft parts on the label. The bill now appears as dark brown instead of black as in a normal specimen and the legs are dark reddish-brown instead of black. The colour of the iris is unknown.

Tree (*op. cit.*) also mentions a partially albino Black-crowned Avocet *Recurvirostra avosetta* L. This seems to me to be an immature bird in normal plumage matched by other specimens in the collection.

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DINNERS AND MEETINGS FOR 1967

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BULLETIN

OF THE

BRITISH ORNITHOLOGISTS' CLUB

EDITED BY

JOHN J. YEALLAND

Volume 88

1968

PRICE FOUR SHILLINGS

PREFACE

After the completion of volume 88 there comes a change in the *Bulletin*. In place of nine numbers per volume (seven of 20 pages and two of 16) there will be six issues (one of 32 pages and five of 28) so that the number of pages per volume will remain at 172. The *Bulletin* will be published six times per annum in alternate months with no summer recess as hitherto and the new typeface and general lay-out are, it is felt, an improvement on the old.

Our gratitude is due to Mr. Philip Burton for his efficient compilation of this Index, to all who have contributed to make the meetings the interesting and enjoyable occasions that they are and to all who have supported the *Bulletin* with so wide a variety of papers and notes. Lastly I should like to thank Mr. K. E. Wiltsher, General Manager of The Caxton and Holmesdale Press for his ready co-operation.

While not exactly retiring with the completion of volume 88, this is an opportunity to express to members my appreciation of their kindness throughout my term of office as Editor.

J. J. YEALLAND.

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W. L. Sclater	1931–1932
H. F. Witherby	1932–1933
G. M. Mathews	1933–1934
N. B. Kinnear	1934–1935
H. Whistler	1935–1936

Vice-Chairmen—*cont.*

D. Seth-Smith	1936–1937
Colonel R. Sparrow	1937–1938
Dr. G. Carmichael Low	1938–1939
Hon. Guy Charteris	1938–1939
W. L. Sclater	1939–1940
Dr. D. A. Bannerman	1939–1940
Captain C. H. B. Grant	1940–1943
B. W. Tucker	1940–1943
F. J. F. Barrington	1943–1945
Dr. E. Hopkinson	1943–1945
C. W. Mackworth-Praed	1945–1946
Dr. J. M. Harrison	1945–1946
Sir Philip Manson-Bahr	1946–1947
B. G. Harrison	1946–1947
Lt.-Colonel W. P. C. Tenison	1947–1948
Miss E. M. Godman	1947–1948
Colonel R. Meinertzhagen	1948–1949
Major A. G. L. Sladen	1948–1949
Colonel R. Meinertzhagen	1949–1953
E. M. Nicholson	1953–1956
Captain C. R. S. Pitman	1956–1959
Mrs. B. P. Hall	1959–1962
R. S. R. Fitter	1962–1965
Dr. J. F. Monk	1965–1968
Sir Hugh Elliott	1968–

Editors

R. Bowdler-Sharpe	1892–1904
W. R. Ogilvie-Grant	1904–1914
D. A. Bannerman	1914–1915
D. Seth-Smith	1915–1920
Dr. P. R. Lowe	1920–1925
N. B. Kinnear	1925–1930
Dr. G. Carmichael Low	1930–1935
Captain C. H. B. Grant	1935–1940
Dr. G. Carmichael Low	1940–1945
Lt.-Colonel W. P. C. Tenison	1945–1947
Captain C. H. B. Grant	1947–1952
Dr. J. G. Harrison	1952–1961
J. J. Yealland	1962–

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W. E. de Winton	1899–1904
H. F. Witherby	1904–1914
Dr. P. R. Lowe	1914–1915
C. G. Talbot–Ponsonby	1915–1918
D. A. Bannerman	1918–1919
Dr. Philip Gosse	1919–1920
J. L. Bonhote	1920–1922
C. W. Mackworth-Praed	1922–1923
Dr. G. Carmichael Low	1923–1929
C. W. Mackworth-Praed	1929–1935

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Captain C. H. B. Grant	1947
W. E. Clegg	1947–1949
Miss G. M. Rhodes	1949–1950
N. J. P. Wadley	1950–1960
Miss E. Forster	1960–1962
Dr. J. G. Harrison	1962–1964
C. J. O. Harrison	1964–1965
M. W. Woodcock	1965–

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C. W. Mackworth-Praed	1935–1936
Major A. G. L. Sladen	1936–1942
Miss E. P. Leach	1942–1949
C. N. Walter	1950–1962
P. Tate	1962–

LIST OF MEMBERS AS AT 31st OCTOBER, 1968

Amended as follows:

New Members

Allison, P. R., Tobacco Section, Division of Plant Industry, Department of Primary Industries, William St. Brisbane 4000, Queensland, Australia.
Booth, D, McDonald, The Moorland Gallery, 23 Cork Street, London, W.1.
Brown, A. J., c/o F.C.A.B. Casilla S.T., Antofagusta, Chile.
Enders Ostrom, 11 Bishop Lane, Avon, Conn., 06001, U.S.A.
Goodwin, Derek, c/o The Bird Room, British Museum (Natural History), Cromwell Road, London, S.W.7.
Gray, Bernard, 22 Hillcrest, 51–57 Ladbroke Grove, London, W.11.
Kinlen, L. J., 24a Alma Place, Oxford.
Lindsay, J. D., 2 Saville Court, Brompton Square, London, S.W.3.
Malcolm, N. S., Field & Headquarters Services Branch, Department of Administration & Finance, F.A.O., Via del Torme di Caracalla, Rome.
Paterson, A., Fresh Creek, Andros, Bahamas.
Plenge, Manuel A., P.O. Box 2490, Lima, Peru.
Pocklington, Roger, Institute of Oceanography, Dalhousie University, Halifax, Nova Scotia.
Post, William, Jnr., 1719 Nottingham Road, Raleigh, North Carolina 27607, U.S.A.
Sell, P. D., Department of Botany, University of Cambridge, Downing Street, Cambridge.
Seton-Browne, Major C. J., Omar Gendarmerie, H.Q.S.A.F., B.F.P.O. 63a.
Stefauski, Raymond A., Department of Zoology, University of Toronto, Toronto 5, Canada.
Thurston, B., c/o Museum and Art Gallery, High Street, Paisley, Renfrewshire.
Walsh, James F., c/o C. R. E. Kainji, P.O. Box 1288, Lagos, Nigeria.
Wheater, R. J., Murchison Falls National Park, Murchison Falls, via Malindi, Uganda.

Resigned

Mr. J. D. Macdonald

Died

The Committee regret to record the death of the following members:—
Miss E. P. Leach (Honorary Treasurer 1942–1949)
Maj.-General C. B. Wainwright (Chairman 1962–1965)

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Corrigenda

p. 1 *Turdus litsitsirupa* should read *Turdus litsipsirupa*

p. 110 *Operornis* should read *Oporornis*

BULLETIN

OF THE

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BULLETIN
OF THE
BRITISH ORNITHOLOGISTS' CLUB

Volume 88

Number 1

Published : 4th January 1968

The six hundred and forty-seventh meeting of the Club was held at the Rembrandt Hotel, London, on the 19th December, 1967.

Chairman: Mr. R. S. R. Fitter

Members present: 17; Guests 3.

The Chairman introduced two of the Fauna Preservation Society's colour films, one entitled "Lake Wilderness" taken at St. Lucia, Natal, and the other entitled "A Million Flamingos" taken at Lake Nakuru, Kenya.

Affinity of *Turdus litsitsirupa*

During a visit to Britain I have been struck by the similarity of the Aethiopian *Turdus litsitsirupa*, though comparatively shorter-tailed, to the Palaearctic *T. philomelos* and *T. viscivorus*. Both C. W. Benson and myself had independently considered it to be nearer to *T. viscivorus*, and he was interested in the fact that my observations of the nests and eggs reinforced this impression. The slightly larger eggs of *T. viscivorus* strikingly resemble those of *T. litsitsirupa*, and the nests are decidedly similar in site, construction and lining, differing from the egg-type and distinctive cemented lining of *T. philomelos*. Although authorities like Meinertzhagen (1951, *Ibis* 93: 443–459) and Voous (1960, *Atlas of European Birds*) have not commented on the relationship between *T. viscivorus* and *T. litsitsirupa*, it may merit superspecific recognition.

P. le S. Milstein

A hybrid Purple × Grey Heron on the Camargue

by Jeffery Harrison and Pamela Harrison

Received 29th September, 1967

On 26th April, 1967, a strange heron was found feeding on the Camargue in the south of France, just inland of Les Saintes Maries de la Mer. There were a number of Purple Herons *Ardea purpurea*, also feeding along the

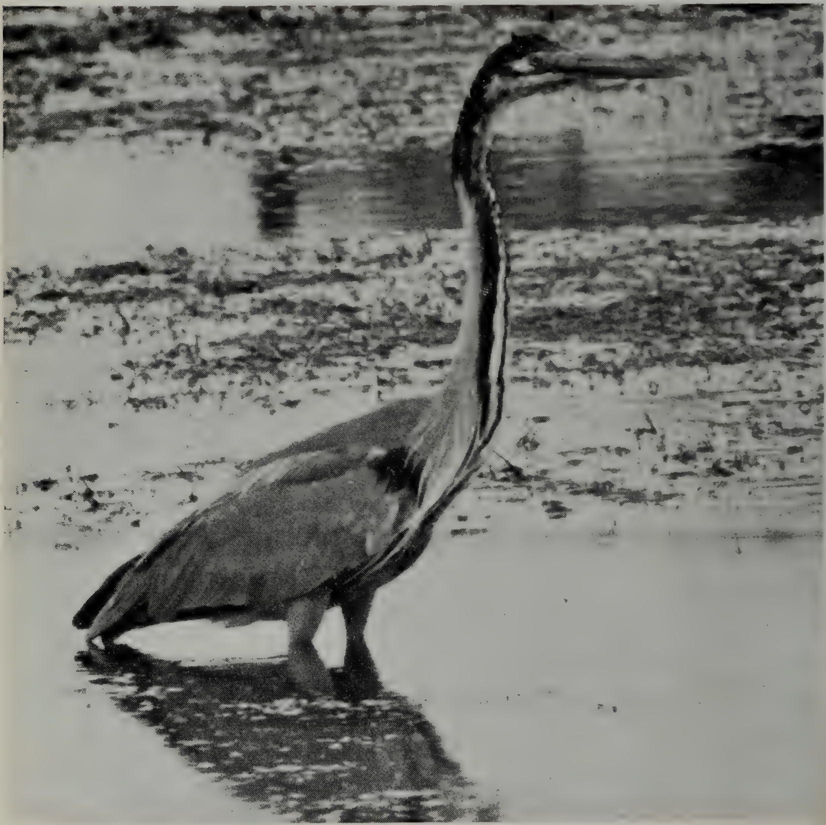
16 JA

same channel, from which it was quite distinct. After studying and photographing it at ranges down to 25 yards we came to the conclusion that it could be nothing other than a hybrid between the Purple and the Grey Heron *Ardea cinerea.*

In size it was slightly larger than the Purple Herons and its general stance was different, for it stood with its neck held much straighter and thus lacked the characteristic kink of the Purple Heron.

In colour it bore a superficial resemblance to the Grey Heron. The main striking difference between either of the two species mentioned was in the pattern of the head and neck. The whole crown was black as in the Purple Heron, but the black was far more extensive behind the eye. This could be accounted for as being derived from the black band running back from the eye in the Grey Heron. The black line running from the base of the mandible, below the eye back to join the extensive black on the back of the head is clearly derived from the Purple Heron.

The black lines running down the side of the neck appeared more conspicuous than in either species. The back of the neck was pale grey, the front white and the ground colour showed a distinct trace of chestnut.



Hybrid Purple × Grey Heron on the Camargue.

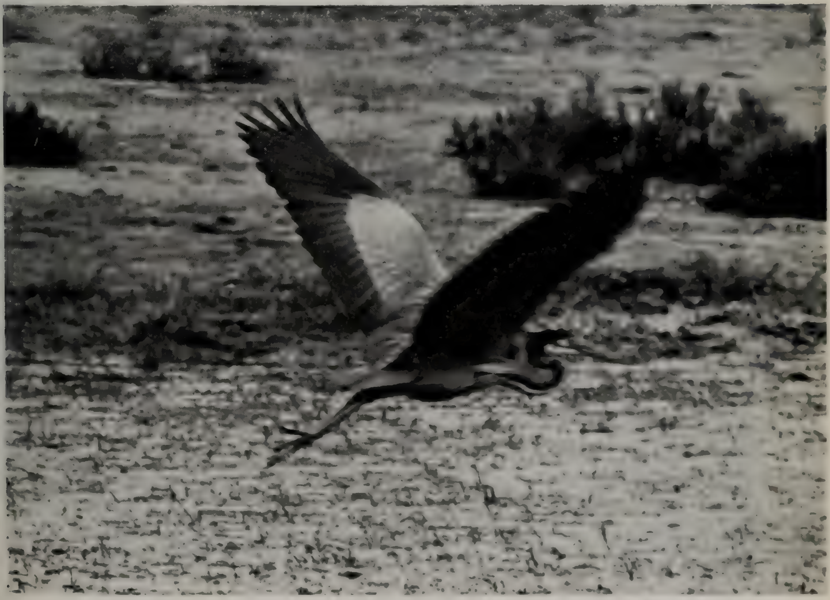
The mantle, long scapulars, wing-coverts, rump and upper tail-coverts were also pale grey with a trace of chestnut on the scapulars. The underparts were whitish. The flanks were black, which showed as a black patch in front of the shoulder at rest and there was no sign of any chestnut. However, the feathers of the thigh were definitely yellowish rather than white.

In flight, the contrast between the blackish flight feathers and the grey wing-coverts was more marked than in the Purple Heron.

The beak was a bright orange-yellow; the irides and legs a paler yellow.

Confirmation of our field identification came from Dr. James Harrison, who had recently seen hybrid Purple × Grey Herons bred in captivity in the Tel Aviv Zoo, Israel. These birds were very similar to the Camargue bird.

The Purple Heron is a common nesting species on the Camargue, where the Grey Heron is still a rare nesting bird, although three pairs proved to be nesting in 1964. Although in general, the Grey Heron tends to nest in tall trees and the Purple Heron in reed beds, both occasionally nest in low bushes, (the Camargue Grey Herons were in dead tamarisk bushes) and the Grey Heron has been found nesting on the ground. There is no complete ecological barrier therefore, which could prevent hybridisation. This would seem most likely to occur in the fringe area of a species expanding its range, where a lone bird of the expanding species is more likely to find itself in isolation from its own species. This would apply to the Grey Heron had the hybridisation occurred on the Camargue, where it is now regularly seen in summer.



Photos: Pamela Harrison

The hybrid in flight showing the contrasted wing pattern.

We are most grateful to Dr. James Harrison, Dr. Luc Hoffman and Mr. Alan Johnson for their advice with this note.

Reference:

Blondel, J., (1965). Le Heron cendre, *Ardea cinerea* L., nicheur en Camargue. *L'Oiseau* 35: 59-60.

The tracheae of hybrid Anatidae

by J. V. Beer

Received 27th September, 1967

Gray (1958) has listed some 400 inter-specific, inter-generic and even inter-tribal hybrids in the Anatidae, many of which show a remarkable degree of fertility, a characteristic of this family (Johnsgard, 1960a). Their plumage is usually intermediate between that of the parent species but hybrids may also show novel characters or sometimes resemble other species (Harrison, 1953; Harrison & Harrison, 1963; Gillham, Harrison & Harrison 1966; Sage, 1966). The behaviour of hybrids shows a comparable pattern and Sharpe & Johnsgard (1966) consider that both plumage and behavioural characters are under the control of relatively few genes. These features have both evolutionary and taxonomic significance.

The structure of the tracheae of the Anatidae is a valuable taxonomic character (Johnsgard, 1961a) and, despite their diverse form, only one brief comment, in a paper by Harrison (1964), has been found on a trachea from a hybrid.

Hybrid tracheae have been obtained from post-mortem material examined at the Wildfowl Trust, Slimbridge, Gloucestershire, and from material supplied by Mr. J. Hall. Dr. J. M. Harrison loaned several specimens from his museum collection of tracheae.

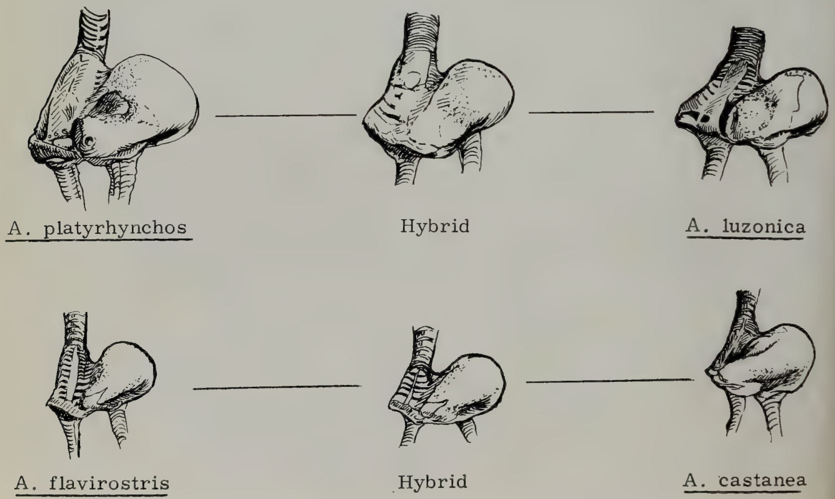


Fig. 1. Syringes of hybrid Anatini—Mallard and teal forms. Ventral view × $\frac{2}{3}$

THE TRACHEA OF THE ANATIDAE

The trachea in the Anatidae is often very distinctive in the males. In some species the width of the tracheal tube varies considerably along its length and in a few species it is convoluted within the sternum or subcutaneously. However, the most interesting feature is the syrinx which in most species has a left lateral enlargement of one of the chambers. This enlargement, or bulla, which is not found in the female, is varied in form and size.

This paper is concerned with a limited number of tracheae from male hybrids of known or putative parentage in the tribes Anatini, Aythyini and Cairinini, all of which show a sexual dimorphism of the syrinx. The nomenclature follows that of Johnsgard (1965).

INTER-SPECIFIC HYBRIDS

Anatini

Crosses studied

Anas platyrhnychos L. Mallard × *Anas luzonica* Fraser Philipine Duck
Anas flavirostris Vieillot South American Teal × *Anas castanea* (Eyton) Chestnut Teal
Anas sibilatrix Poeppig Chiloe Wigeon × *Anas acuta L.* Pintail
Anas penelope L. European Wigeon × *Anas acuta*
× *Anas clypeata L.* Common Shoveler
× *A. sibilatrix*
Anas americana Gmelin American Wigeon × *Anas falcata* Georgi Falcated Teal
Anas querquedula L. Garganey × *Anas strepera L.* Gadwall
× *Anas cyanoptera* Vieillot Cinnamon Teal

platyrhynchos and *luzonica* are typical members of the Anatini and show the characteristic syrinx of the tribe. The latter has the smaller syrinx and the hybrid is intermediate in size (Fig. 1).

flavirostris and *castanea* both have typical anatine tracheae about half the size of *platyrhynchos*. The syrinx of *castanea* is the larger and the hybrid is again intermediate (Fig. 1).

The three wigeons, *sibilatrix*, *penelope* and *americana*, have syringes which differ markedly in size and form and also from that of *platyrhynchos* (Fig. 2). The bulla of *sibilatrix* is large, well rounded and bulbous, but in *acuta* it is smaller and more angular like *platyrhynchos*. The hybrid between *sibilatrix* and *acuta* is intermediate in size and shows some of the roundness of the former (Fig. 2).

The syrinx of *penelope* is smaller than *sibilatrix* and the bulla, though well rounded, is less bulbous (Fig. 2). The hybrid between *penelope* and *acuta* is similar to the previous hybrid but is a little smaller. *clypeata* has a very small syrinx with a reduced bulla that is slightly angular and ovoid

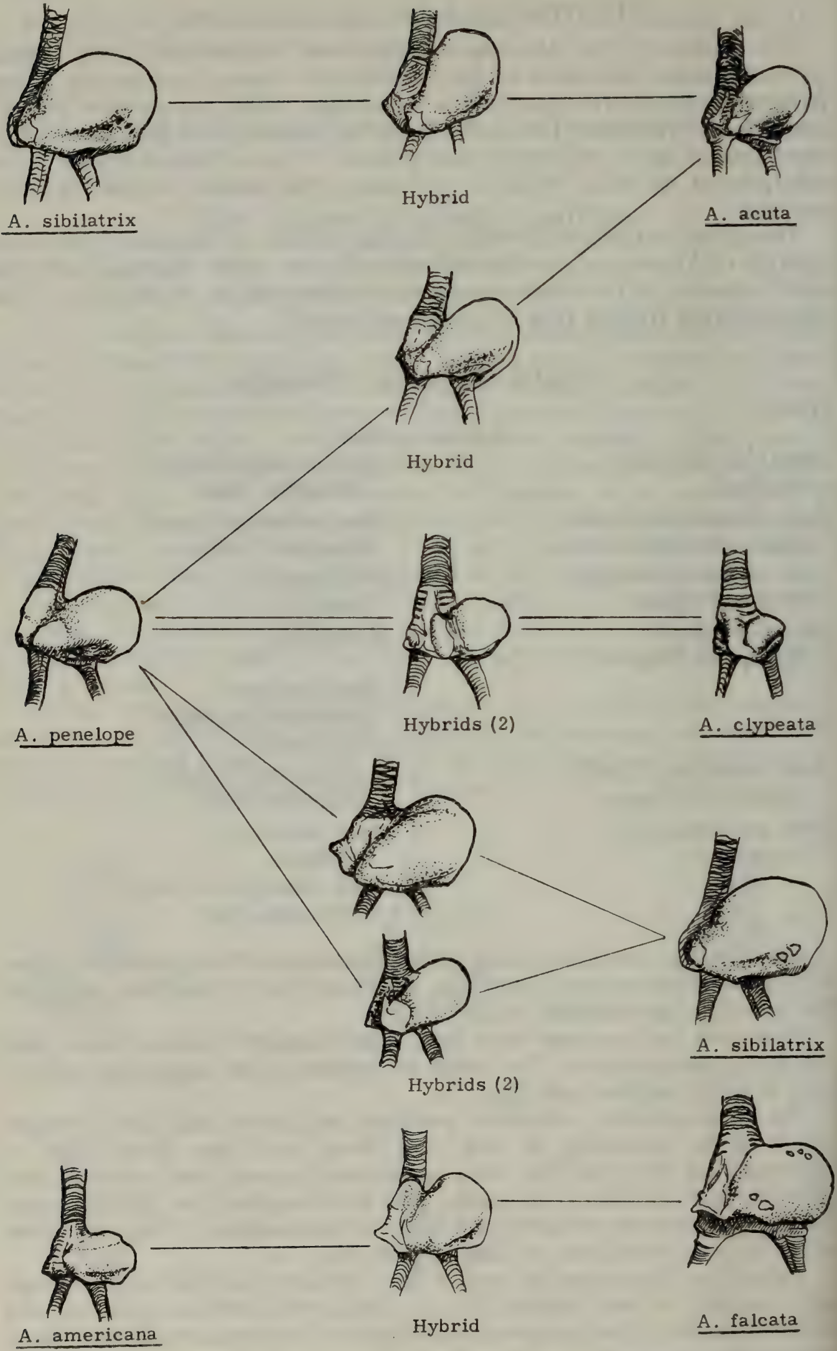

A. sibilatrix
Hybrid
A. acuta
Hybrid
A. penelope
Hybrids (2)
A. clypeata
Hybrids (2)
A. sibilatrix
A. americana
Hybrid
A. falcata

Fig. 2. Syringes of hybrid Anatini—crosses with the wigeons. Ventral view × ⅔

rather than pear shaped. Two hybrid specimens with *penelope*, one from known parents and one from putative parents, are identical. They are a little larger than *clypeata* and show the roundness of *penelope*, giving them a more typical anatine form. Two specimens of a *penelope* × *sibilatrix* hybrid have been seen and in one the bulla is nearest that of the former but is a little larger and slightly more bulbous. However, the second specimen is smaller than either parent but has the same general form of the first.

americana has a small bulla which is not bulbous nor particularly rounded (Fig. 2). The hybrid with a putative *falcata* is intermediate in size and form showing some of the roundness of this parent and the wigeons.

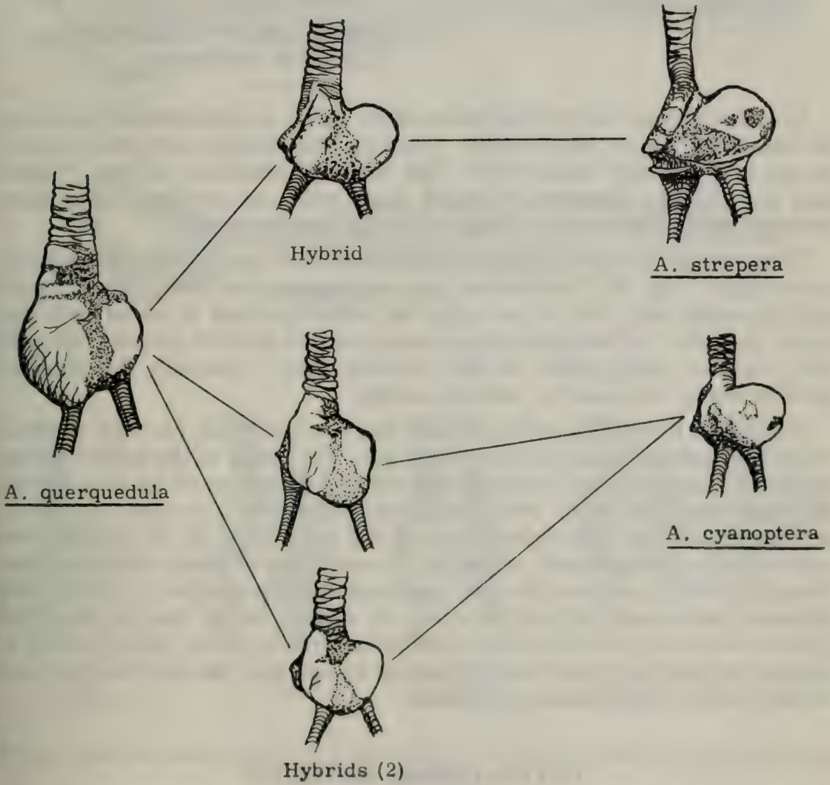


Fig. 3. Syringes of hybrid Anatini—crosses with the Garganey. Ventral view × $\frac{9}{8}$

querquedula has a syrinx which differs from the rest of the Anatini. The bulla is flask shaped (Fig. 3), and lies ventrally over both the bronchi with the larger lobe over the right bronchus. The syrinx of *strepera* is typically anatine but the hybrid, while of similar size to both parents, shows some of the characteristics of *querquedula*. The bulla extends but little to the left, and the right apex, while still between the bronchi, is enlarged and rounded. The small syrinx of *cyanoptera* has the left apex of the bulla displaced posteriorly. The larger of two hybrid specimens, of putative parentage, is intermediate in size and shows the right bullal lobe of *querquedula* and the posterior displaced left lobe of *cyanoptera*. The smaller specimen is similar in form but is nearer in size to the syrinx of *cyanoptera*.

Aythyini

Crosses studied

Netta rufina (Pallas) Red-crested Pochard	× *Netta erythrophthalma* (Wied) Southern Pochard
Aythya ferina (L.) European Pochard	× *Aythya fuligula* (L.) Tufted Duck
	× *Aythya nyroca* (Güldenstädt) Common White-eye

In the Aythyini the tracheal tube often shows a considerable variation in diameter along its length (Figs. 4 and 6). The junction with the syrinx is broad and partially fenestrated. The bulla is relatively narrow, ridged and has slightly fenestrated lateral faces with non-ossified membranes through which the interior of the bulla can readily be seen.

The syringes of *rufina* and *erythrophthalma* are similar but the tracheal tubes differ (Fig. 4). The former has enlargements at both the syringeal and laryngeal ends but in the latter the widest portion is about half-way along the tube. In the hybrid the syrinx is similar to both parents but only the posterior enlargement of the tracheal tube is present, the anterior portion being wide and of uniform width.

ferina has hybridised with *fuligula* and *nyroca* which have no tracheal tube enlargements as in the two *Netta* spp. The width of the tube in *ferina* is greater than in either *fuligula* or *nyroca* and the syrinx of the first species is larger than the other two. The main difference is in the amount of ossification of the right lateral face of the bulla (Fig. 4). In *fuligula* this consists of a fine network, in *ferina* of a wide rim of bone with one large fenestra, while in *nyroca* the face is almost entirely ossified. In the hybrid between *ferina* and *fuligula* the syrinx is slightly larger than in the latter species but the right lateral face is similar in form to *ferina*. In the *ferina* × *nyroca* hybrid the syrinx is intermediate in size and the right lateral face of the bulla is almost entirely ossified.

INTER-TRIBAL HYBRIDS

Anatini × Cairinini

Crosses studied

Anas flavirostris	× *Amazonetta brasiliensis* (Gmelin) Brazilian Teal
	× *Aix sponsa* (L.) North American Wood Duck
Anas sibilatrix	× *Aix sponsa*
	× *Sarkidiornis melanotos* (Pennant) Comb Duck

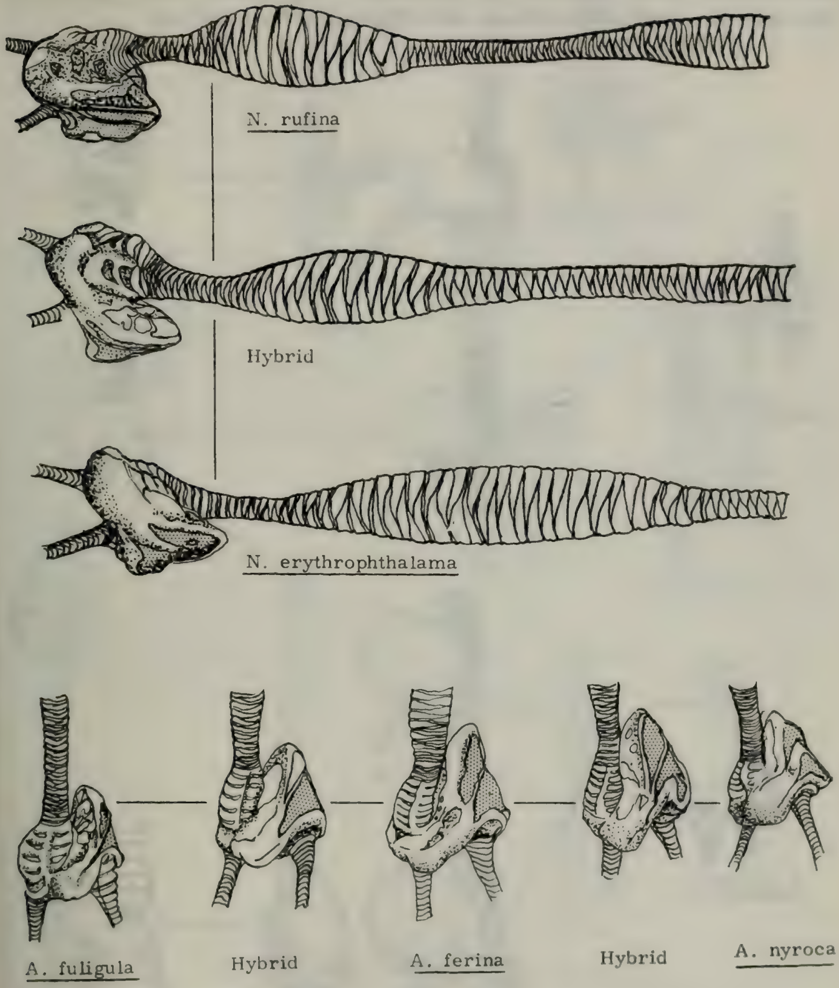


Fig. 4. Tracheae and syringes of hybrid Aythyini—*Netta* crosses and *Aythya* crosses. Ventral view $\times \frac{2}{3}$

The general form of the trachea of the Anatini has been described above. In the Cairinini the syrinx is highly variable in size and form. For example in *Nettapus*, spp., the Pygmy Geese, the bulla is extremely small, in *Plectropterus*, the Spur-winged Goose, it is large, discoidal and ossified but thin walled.

brasiliensis has a small syrinx indistinguishable in form from many of the Anatini. The hybrid with *flavirostris* has a syrinx the same size as the latter and is a little more angular but typically anatine in form (Fig. 5). The bulla of *sponsa* is rounded and ovoid with the long axis running from the tracheal tube towards the posterior. The hybrid with *flavirostris* has a globular bulla which shows the influence of both parents.

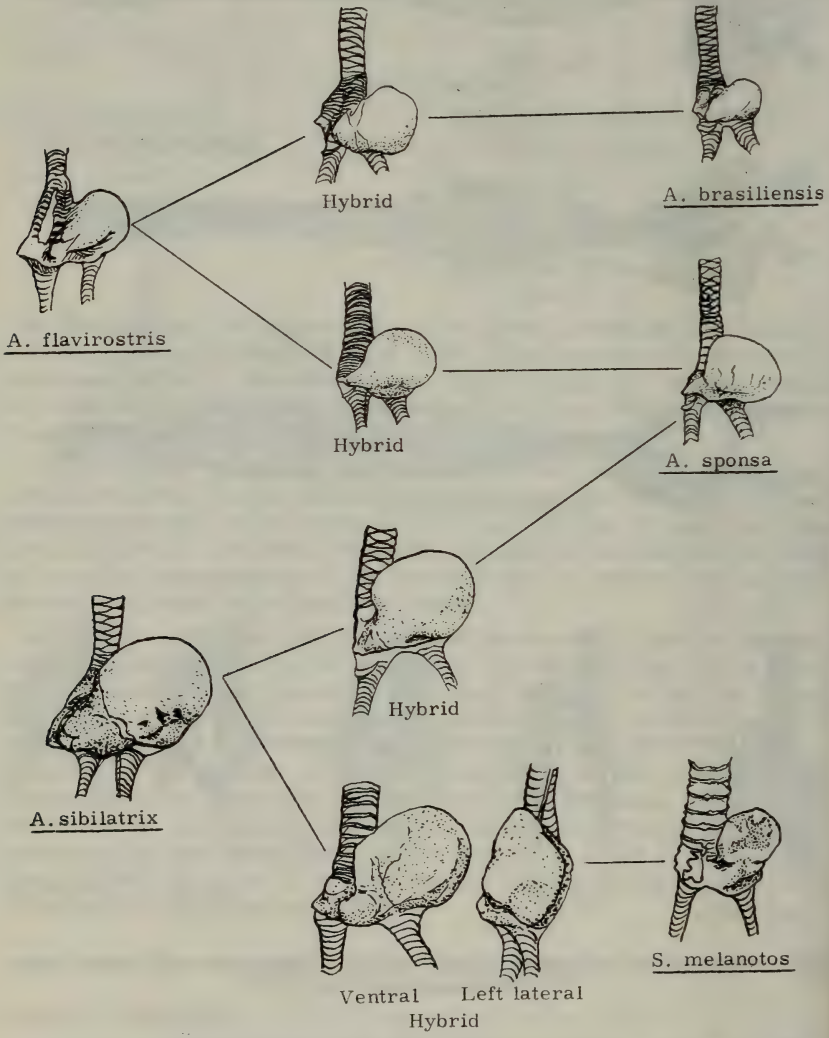

Hybrid
A. brasiliensis
A. flavirostris
Hybrid
A. sponsa
Hybrid
A. sibilatrix
S. melanotos
Ventral
Left lateral
Hybrid

Fig. 5. Syringes of hybrid Anatini x Cairinini. Ventral view × $\frac{2}{3}$

sibilatrix has hybridised with *sponsa* and the hybrid syrinx is intermediate in size, with a well rounded bulla as in *sibilatrix* but with a right hand apex that is large and rounded as in *sponsa* (Fig. 5). *melanotos* has a small, thin walled, irregular discoidal bulla quite unlike *sibilatrix* with which it has hybridised. The hybrid bulla, when seen ventrally, is the same shape as *sibilatrix* but is narrow and discoidal when seen laterally. The degree of ossification is much greater than in *melanotos*.

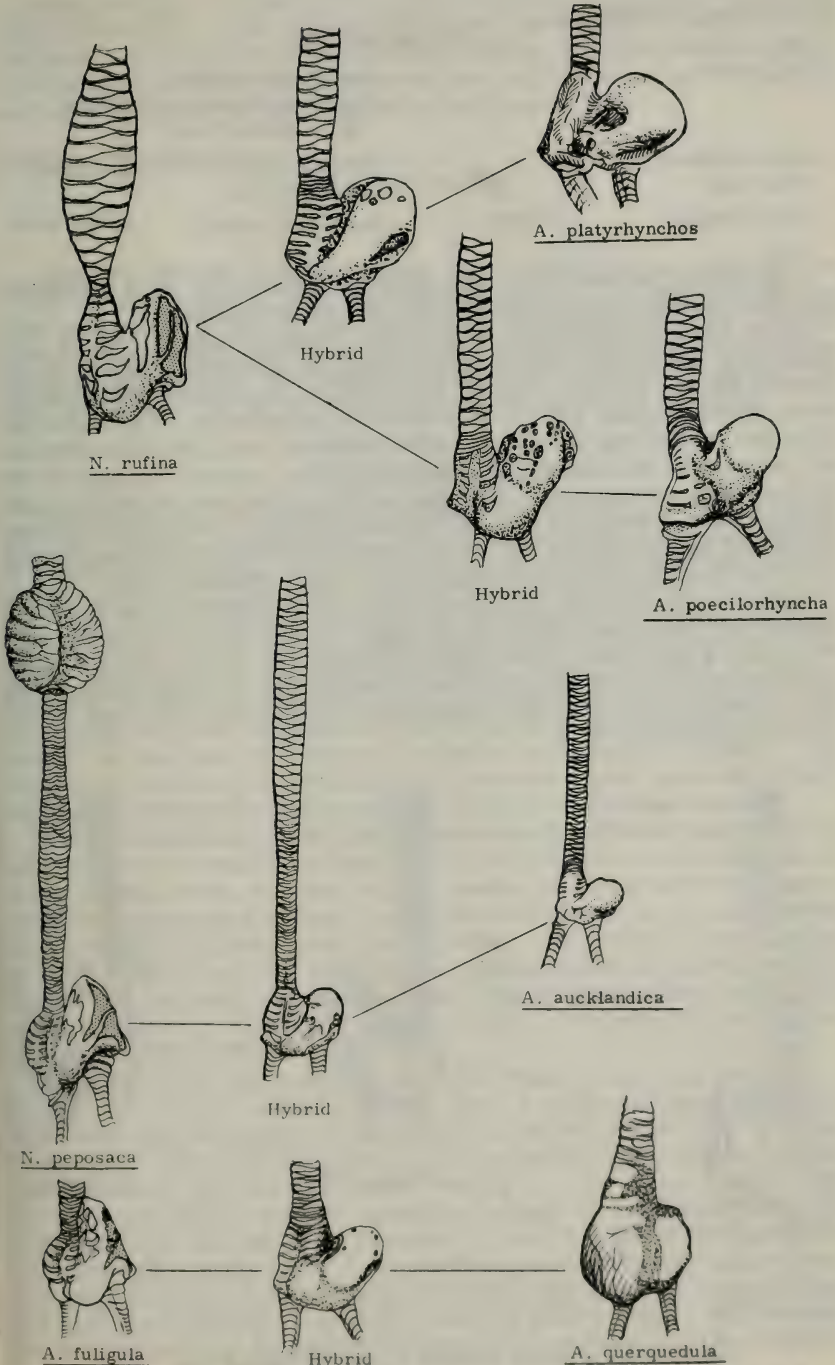

N. rufina
Hybrid
A. platyrhynchos
Hybrid
A. poecilorhyncha
N. peposaca
Hybrid
A. aucklandica
A. fuligula
Hybrid
A. querquedula

Fig. 6. Tracheae and syringes of hybrid Aythyini x Anatini. Ventral view

Aythyini × Anatini

	Crosses studied
Netta rufina	× *Anas platyrhynchos*
	× *Anas poeciloryhncha* Forster Spot-billed Duck
Netta peposaca (Vieillot) Rosybill	× *Anas aucklandica* (G. R. Gray) Brown Teal
Aythya fuligula	× *Anas querquedula*

The hybrids between these two tribes are perhaps the most interesting because of the widely differing forms in the parent species.

rufina has hybridised with two typical species of *Anas*. (Fig. 6). The trachea of the hybrid with *platyrhynchos* is not different in size from the parents but the tracheal tube is a little wider at its anterior and posterior ends reflecting *rufina*. The syrinx is distinctly intermediate with a bulla that is largely ossified and partially rounded reflecting *Anas*. The characteristics of *Netta* show as a narrowing of the bulla with a ventral line near to the tracheal tube, several small fenestrae on the ventral surface and a single medium sized fenestra on each of the lateral faces. In the hybrid between *rufina* and *poecilorhyncha* the bulla is even more angular and fenestrated but otherwise the trachea is similar to that of the previous hybrid.

peposaca has a typical aythyine trachea but the tracheal tube is dilated around the mid-point. This does not show in the hybrid with *aucklandica* which has a small but typical anatine trachea. The hybrid syrinx is intermediate in size and form. It has a broad connection with the tracheal tube and a partially rounded and fenestrated bulla which lies close to the tracheal tube (Fig. 6).

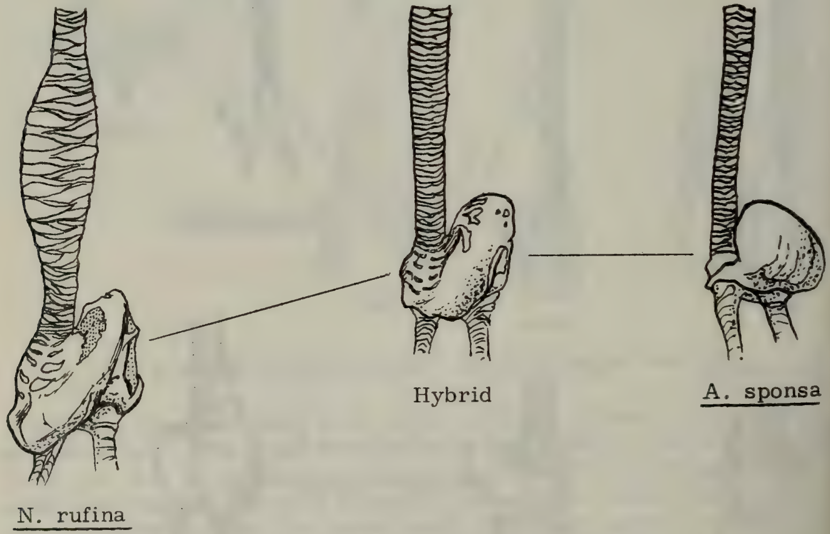


Fig. 7. Syrinx of hybrid Aythyini x Cairinini. Ventral view × ⅔

fuligula when hybridised with *querquedula* shows a somewhat *Anas* type syrinx but with a broad tracheal tube base intermediate between *Aythya* and *Anas*. The bulla is rounded and intermediate in form between a typical *Anas* and *querquedula*, but there are a few small fenestrae on the ventral surface and a small narrow fenestra on each lateral face.

Aythyini × Cairinini

Cross studied

Netta rufina × *Aix sponsa*

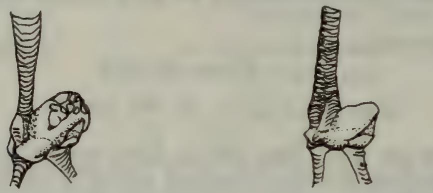
These two species, described above, have very dissimilar tracheae. The hybrid is intermediate in both form and size (Fig. 7). The tracheal tube is a little wider than in *sponsa*, and uniform in diameter, except for a broad base reflecting *rufina*. The bulla is partially ridged with a few small fenestrae simulating *rufina*, the remainder being well ossified as in *sponsa*. The angle of the bulla is like *rufina* but *sponsa* does not show any effect.

DISCUSSION

Most of the hybrid specimens described are intermediate in both form and size which is in keeping with the findings of other workers on hybrid structure and behaviour. The exceptions draw attention to a number of points which must be considered when working with hybrid material. Individuals may differ in size, reciprocal crosses may be different, the genetic make-up will depend on what is available in the genetic pool and the expression of this in the phenotype will depend on the precise genetic structure. A serious problem in much hybrid work is that parentage is often putative, but reasonably accurate assessments can be made using evidence from the history of the bird, its plumage, structure including the trachea, and behaviour. Obviously detailed studies of hybrids require controlled breeding but nevertheless something can be learnt from existing material.

Where the tracheae of the parents are markedly different the influence of both parents can readily be seen in the hybrid, such as when *querquedula* is one of the parents or when *Netta* or *Aythya* is crossed with an *Anas*. In these cases supporting evidence can be provided on the parent composition of a hybrid. In others where the differences are smaller it may still be possible to help assess the identity of a specimen (Beer in Harrison, 1964). In another instance, had all the appropriate specimens been available it might have been possible to have provided further evidence in 'The "Lesser Scaup" problem' (Perrins, 1961).

The syringes of the Anatidae take three main forms, they may lack a bulla, have a fully ossified bulla, or have a bulla with membranaceous fenestrae. *Anas angustirostris* Ménétriès, the Marbled Teal (Fig. 8), has a bulla that is intermediate between the fully ossified type such as *Anas* and the fenestrated type such as *Netta*. Placing it in the genus *Anas* follows Delacour & Mayr's (1945) systematic scheme but Johnsgard (1961b) considers it is not an *Anas* placing it in its own genus *Marmaronetta* (Reichenbach) but retaining it tenatively in the Anatini. He bases this on behaviour and structure including the syrinx, which has an anatine shape but aythyine fenestrae. He considers that the species forms a link between the Anatini and the Aythyini. In his paper on tracheae Johnsgard (1961a) places *Marmaronetta* as a branch on the line leading to *Anas* but near to the branch to the Aythyini. However it is possible that we have an instance of reticulate evolution in which *angustirostris* has evolved from a hybrid between an ancestral species of the Anatini and an ancestral species of the Aythyini. Although many factors operate against the evolution of a new species from an original hybrid (Sibley, 1959) the fact that the Anatini × Aythyini hybrid tracheae bear some resemblance to that of *angustirostris* suggests that this may have happened, which would accord with Johnsgard's assessment of the species' taxonomic position.



A. angustirostris C. leucophrys

Fig. 8. Two further species with fenestrated bullae. Ventral view × $\frac{2}{3}$

Fenestration also occurs in other genera, especially those in the Mergini, and in *Calonetta leucophrys* Vieillot, the Ringed Teal (Fig. 8). Several authors (Johnsgard, 1960b) variously consider that this species has affinities with the Anatini, with the Cairinini and with the Aythyini. The true affinities of such abberant species and other species may be more readily assessed if something could be learnt of the evolution of the trachea by the study of hybrids.

Acknowledgments

I am grateful for additional material supplied by Mr. J. Hall and Dr. J. M. Harrison; to Dr. G. V. T. Matthews for reading and criticising the paper; and to Carol Ogilvie for providing the drawings.

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Occurrence and behaviour of the Red-footed Booby at Ascension Island, 1962-64

by K. E. L. SIMMONS

Received 15th September, 1967

The Red-footed Booby *Sula sula* (Linn) is now very rare at Ascension Island (latitude 7° 57′ South and longitude 14° 22′ West in the Atlantic Ocean), although it probably once nested commonly on the main island until, like the majority of Ascension seabirds, its breeding colonies were extirpated during the nineteenth century mainly by introduced cats (Stonehouse, 1960, 1962). The species was last reported in large numbers in 1946 when Tomlinson (1947) found thousands roosting on inaccessible inland perches on the main island in the vicinity of Powers Peak, White Hill and Weatherpost (see maps in Stonehouse *op. cit.* and in Simmons 1967c for most of the localities mentioned in the present paper). In 1957-59, however, the members of the B.O.U. Centenary Expedition to Ascension failed to find any Red-footed Boobies on the mainland, the only known birds being about ten pairs living on Boatswainbird Island off the south-east coast (in view of Powers Peak, etc.). Only one of these pairs was known to attempt nesting (Dorward 1962a). Ashmole (1963) suggests that the birds seen by Tomlinson "may have been the survivors from the original Ascension population, long prevented from breeding on the [main] island by the presence of cats" and possibly too old to breed in 1946; most of them would have reached the end of their life-span between 1946 and 1957 by which time they have been reduced to the tiny, mainly non-breeding remnant on Boatswainbird Island.

SIGHTINGS OF RED-FOOTED BOOBIES IN 1962-64

I was resident on Ascension for two years in 1962-64 and made an intensive study of the Brown Booby *S. leucogaster* (Boddaert) at Stacks 1 and 2 off the north-west coast near the settlement at Georgetown (Simmons 1967b and c). During this time, I saw the Red-footed Booby on a few occasions and was also able to make some useful comparisons between the behaviour of this species and the Brown Booby. These observations seem worth placing on record as possibly the last on *S. sula* at Ascension before its imminent extinction there.

Sightings in 1962-64 were as follows:

(1) brown phase individual with white tail soaring over the mainland near Powers Peak, 17th June, 1962;

(2) white phase bird perched on ground near Powers Peak, collecting nest-material which it took in the direction of Boatswainbird Island, 23rd July, 1962;

(3) white phase individual on eight dates between 1st December, 1962 and 17th January, 1963, at Stacks 1 and 2 (see below);

(4) white phase bird on the wing at sea near Boatswainbird Island, 5th March, 1963, (no birds seen on the islet itself), and

(5) white phase bird flying up-coast across Clarence Bay (Georgetown) on the evening of 12th April, 1963.

There were no further sightings during the remaining ten months of my stay, or during a return trip to Ascension in April, 1966, (Simmons 1967a), but I did not again visit Boatswainbird Island or the south-east corner of the mainland.

A RED-FOOTED VISITOR TO THE GEORGETOWN STACKS

I have called the first two of the five coastal stacks on the north-west of Ascension the ''Georgetown Stacks'' (Simmons 1967b) and these were visited on 645 days between 18th February, 1962 and 20th February, 1964—on every day between 19th April, 1962 and 19th April, 1963 and almost daily thereafter until I left Ascension. Brown Boobies were strictly resident at these colonies but the single Red-footed Booby was recorded only on the dates mentioned.

On the morning of 1st December, 1962, as I arrived on the mainland opposite Stack 2 for a routine watch, a white phase Red-foot flew up from the stack and passed up-coast. It was not seen again until 14th December when it was found preening at Stack 1; it left soon after, moving up-coast and landing on Stack 2. It was again watched briefly on Stack 1 on 16th December and in flight over the mainland near Stack 2 on the 17th. Then, for three consecutive days (27th-29th December), the bird was studied at close range at Stack 2 where it had taken up temporary residence near the site of a young adult male Brown Booby, showing social responses to this bird and other Brown Boobies. The Red-foot was last seen on 17th January, 1963 when it circled Stack 1, then Stack 2, before moving off up-coast. That this bird sought out the company of Brown Boobies and displayed to them indicates that it was unable to find a mate among the survivors of its own species at Ascension.

APPEARANCE

The white phase Red-footed Booby was, of course, quite different in plumage-type from its predominantly dark congener—with mostly silky-white plumage except for a faint golden tinge on the head and lower back and black on the wings—though the brown phase of the species is much more similar to the Brown Booby. This particular individual was about the same size as the male Brown Booby (but with proportionately longer wings and tail and shorter tarsi) and may well have been a female as the male Red-foot is smaller than both males and females of the Brown Booby (see Simmons 1967b). At rest it looked much shorter in the neck than the Brown Booby but, when stretched to the full, its neck was actually longer. The neck feathers were long, almost lanceolate, giving it a ''pleated'' appearance when sleeked and a ''rakish'' one when relaxed—but in any case without the neat, plush, ''natty'' look of the shorter feathered Brown Booby. Like the other pantropical species, the Masked (or White) Booby

S. dactylatra Less., the Red-foot is flat across the base of the bill, lacking the characteristic raised "nasal bridge" of the Brown Booby, though otherwise rather similar in the shape of the bill to the latter. The Red-foot had most distinctive soft-part colours; the bill was a silvery blue-grey with the thin line of bare skin on the forehead salmon-pink; the skin round the large, dark eye was pale green; the sides of the lower mandible salmon-pink, bordered by a black line; the central gular area jet black, extending to a point within the interramal space; and the tarsi and toes a dark, deep red. The male Brown Booby in "nuptial colour" at Ascension has the bill a silvery pink and the feet, facial and gular skin bright chrome-yellow, with the skin round the eye bright blue, while the female has all these areas pale yellow throughout the year.

MAINTENANCE BEHAVIOUR

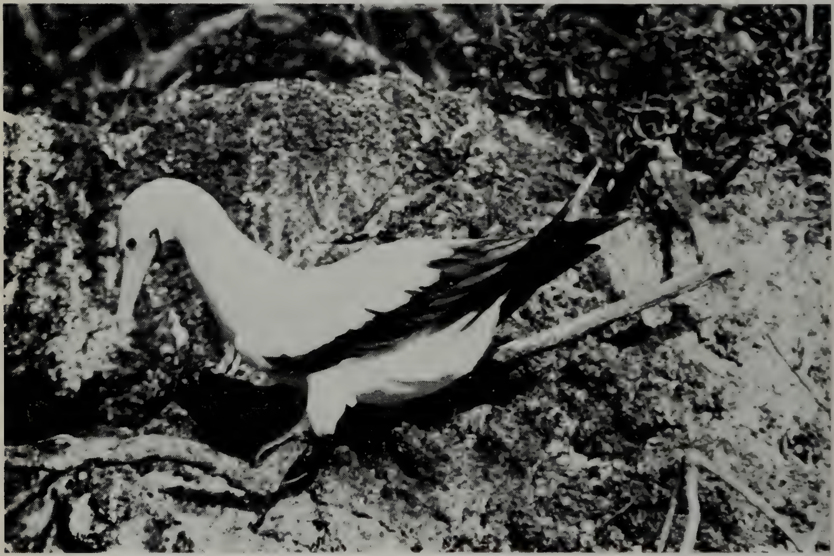
The Red-footed Booby was not seen to dive for food. Its preening behaviour and comfort-movements (such as were seen) resembled those of the Brown Booby, including the double wing-beating, rolling and one wing-waving during bathing (Simmons in prep.). However, it used the wing-shake (or wing-ruffle) much more frequently in social situations than the Brown Booby (see below). It preened or rested when alone at its site but responded socially to Brown Boobies, and especially the male mentioned, when these were present and near.

PERCHING AND MOVEMENT

At both stacks, the tree-adapted Red-foot perched on steep sites, such as rock tops, which usually permitted it a firm grip with its toes. At Stack 2, it settled regularly on rocks above and near the "hollow" (nest-site) of the young male Brown Booby—a rather deep and restricted recess in the top of a sloping boulder just large enough to take a single booby—entering this hollow in the absence of its usual owner. The Red-foot moved up and down from point to point mainly by either hopping, with the use of its wings to keep balance, or by flying out and landing back—but it was also seen occasionally to shuffle rather clumsily when only slightly changing its position. Its long tail sometimes trailed over the ground. After most hops or landings it performed a marked post-movement display (see below). In flight it resembled the Brown Booby much more than the Masked Booby (even though very similar to the latter in plumage-type)—flying low over the water like the former and not high up like the Masked, but its wing-beats were faster and less flexible than the Brown's and its wings more pointed and angled, with the primaries characteristically down-bent. The black trailing edge along the whole length of the wing, and a dark spot on the under surface near the wrist, were most distinctive in the otherwise wholly white bird. When pursued in flight by Brown Boobies, the Red-foot outdistanced them.

POST-MOVEMENT DISPLAY

After a hop or flight from point to point, apparently always when responding socially to the Brown Boobies, the Red-foot usually landed in a most distinctive manner (though sometimes this behaviour was only perfunctory). Uttering snorting, horse-like landing-calls ("gru . . ."), it flew in with neck arched and sleeked, bill pointing obliquely down, to alight and bow the bill still lower so that it was inverted and pointing back close to the toes in a brief but deliberate "curtsey-bow", following this with a recovery rear up of the head into an erect "frozen" posture before the bird relaxed. A similar curtsey-bow occurred after a hop and it seemed possible to me that such behaviour functioned to "indicate" the species-specific colour of the feet. The Brown Booby at Ascension has no special post-landing behaviour, though it gives landing-calls (Simmons 1967c). It does have a "post-hop" display (term from van Tets 1965) in social situations, formally lowering the head in a "bill-tuck" (Dorward 1962b, Simmons 1967c and in prep.).



Photograph: J. B. Nelson

Post-hop display of Red-footed Booby, Galapagos, 1964.

SALUTING

On the late morning of 27th December, the Red-footed Booby was alone within the hollow of the young male Brown Booby and, when the latter returned to a perch a few yards away and started preening, the Red-foot displayed to him. It continued to display to Brown Boobies intermittently at a variety of intensities for the next two hours from perches near the hollow, mainly to the young site-male but also occasionally to birds flying over. The display was one that is characterisic of boobies, especially in advertising situations, and usually called "sky-pointing" (Dorward, 1962b van Tets 1965, Nelson 1964, 1965, 1967) though Verner (1961) termed it the "four point" display in the Red-footed Booby and I prefer the name "saluting" (Simmons 1967c).

At full intensity, the Red-footed displayed thus:

(1) it stood with its body in a downward-oblique position and did an introductory sequence of forward and sideways bows (''pumping''), staring intently at the Brown Booby between bows;

(2) it then saluted *if the other bird looked at it* by slowly throwing back the head and stretching the neck until the bill was more or less vertical (sky-pointing), with the gular pattern exposed;

(3) at the same time it lowered the front end of the body still lower but raised its rear-end, especially the long tail, and ''swanned'' the wings (with the wrists lowered and elbows up, the folded primaries moving upwards and forwards over the back and opening slightly outwards),

(4) gave a loud, low-pitched, drawn-out, mooing ''trumpet'' or ''bellow'' and

(5) slowly relaxed afterwards.

The bird sometimes saluted twice in succession but usually there was an appreciable pause between salutes. At lower intensities, the display had only a partial throw-back of the head. little or no wing movement and no call—at times consisting merely of a slight head and tail raise (or even only the latter) after the initial series of bows and staring.

The full salute of the Brown Booby differs from the corresponding display of the Red-footed Booby in the following main respects:

(1) the bird stands in a more erect, upward-oblique position;

(2) it usually simply ''stares'' at the other bird before saluting, with only occasional bowing (if any);

(3) the ''throw-back'' of the head is much faster;

(4) there is no wing movement and little sway up of the tail;

(5) the call is an individual-specific whistling one;

(6) salutes may follow one another quickly;

(7) only the male salutes (whereas we know from the literature—*e.g.* Verner (1961)—that both sexes of the Red-foot will perform), and

(8) salutes are often given in flight (there is no record of this for the Red-foot).

RITUALISED WING-SHAKING

The Red-footed Booby was noted to wing-shake frequently in social situations but, unfortunately, my notes go little further than stating that this was ''a ritualised form of the normal comfort-movement'' and do not make the precise situation clear. It is possible that the wing-shaking occurred either as a post-landing or pre-take-off behaviour, probably the latter. The Brown Booby has no ritualised wing-shaking though it sometimes does normal shaking before moving in social situations.

AGGRESSIVE BEHAVIOUR

Only twice were the Red-foot and the male Brown Booby seen within close contact-range of each other and both encounters ended in aggresive behaviour. Once when the Brown Booby took nest-material into his hollow the Red-foot leaned down from above and pointed its bill towards him but then started vigorously bill-thrusting while ''flicking'' up both wings, partly open, and quickly closing them on each forward thrust, grunting harshly. One another occasion, when the Brown Booby was in his hollow and threatened the Red-foot, the latter jabbed vigorously and pecked his bill without any wing movement.

RESPONSE OF BROWN BOOBIES

In the main, the young male Brown Booby seemed somewhat apprehensive of the Red-foot and avoided it even when it was at the site, sometimes showing distant threat-behaviour—"ruffling", "hunching" and "bowing" (see Simmons 1967c). In the encounters mentioned above, he quickly retreated when attacked after bringing material to his site and, on the other occasion, faced up to the Red-foot, "ruffling", "hunching" and lunging incipiently towards it, provoking it to jab back. At Stack 1 and twice at Stack 2, female Brown Boobies "supplanted" it from the air when it had settled at their perches, while a number of birds chased it in flight near Stack 1.

SUMMARY

The Red-footed Booby *Sula sula* is now very rare at Ascension Island and the few sightings in 1962-64 are recorded, involving both white and dark phase individuals. A single white phase bird, possibly a female, visited two colonies of Brown Boobies *S. leucogaster* for a few weeks and responded socially to that species, including the performance of advertising display. Some comparisons are made between the two species.

Acknowledgments

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23rd January, 20th February, 19th March, 16th April, 21st May (provisional).

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The six hundred and forty-eighth meeting of the Club was held at the Rembrandt Hotel, London, on the 23rd January, 1967.

Chairman: Dr. J. F. Monk

Members present: 15; Guests 4.

Recording calls of some Malayan birds were played and commented upon by Mr. D. V. Manning.

A new name for a race of bunting from Africa

In *Durban Mus. Novit.*, vol. viii, 10, 1967, p. 113, I proposed *Emberiza flaviventris vulpecula* Clancey from the Langata Forest, Ngong, Nairobi, Kenya. Unfortunately, this name is now found to be pre-occupied by *Emberiza affinis vulpecula* Grote, 1921: Bosum, Cameroon (*vide Anz. Orn. Ges. Bayern*, No. 5, 1921, p. 39). I propose

Emberiza flaviventris carychroa, nom. nov., for *E. f. vulpecula* Clancey, 1967, not *E. a. vulpecula* Grote, 1921. P. A. Clancey

The southern forms of *Serinus canicollis* (Swainson)

by P. A. Clancey

Received 14th October, 1967

At the present time two southern African races of the Cape Canary *Serinus canicollis* (Swainson) are recognised by many workers, these being *S. c. canicollis* (Swainson), 1838: Cape of Good Hope, and *S. c. thompsonae* Roberts, 1924: Woodbush, Tzaneen, northern Transvaal. The latter race is however frequently treated as a synonym of the former. It was separated in the first instance by Roberts, *Ann. Transv. Mus.*, vol. x, 3, 1924, p. 186, as having the "Upper parts golden yellow" as against a duller yellow in *S. c. canicollis*, but this character has eluded most later workers. In a short note in *Durban Mus. Novit.*, vol. vi, 19, 1963, pp. 261, 262, I defined the characters by which a taxon *thompsonae* could be recognised, these being briefly a darker and more olivaceous citrine to the throat and breast in males, and a darker and browner, less greenish, upper surface to females in freshly moulted dress. *S. c. canicollis* is mainly restricted to the western and southern Cape, while *S. c. thompsonae* is distributed over the south-eastern highland system of South Africa. With the separation of a third southern African race in *S. c. griseitergum* Clancey, 1967: Stapleford Forest Reserve, Umtali, Rhodesia, it seems opportune to present a formal subspecific revision of the southern complex of populations of this African canary.

To augment the series in the Durban Museum, further material for this research was borrowed from the East London Museum (through Mr. C. D. Quickelberge), the Transvaal Museum (through Mr. O. P. M. Prozesky) and the National Museum of Rhodesia (through Mr. M. P. Stuart Irwin). To these gentlemen I tender my thanks. The combined material assembled comprised some 200 specimens.

Variation within the zoogeographical South African populations of *S. canicollis* is relatively slight. In the population continuum extending from the western and south-western Cape through the southern mountains of the same province to Natal, Zululand, Swaziland and the Transvaal, eastern birds differ from western ones in the development of a darker throat and breast colour in males and a browner upper surface in freshly moulted females. In eastern Rhodesian birds, which are geographically isolated from those of South Africa, males are palpably greener, less citrine coloured, below, and both sexes show a greater development of grey over the entire mantle and the scapulars than in either *S. c. canicollis* or *S. c. thompsonae*.

Resulting from a critical appraisal of the adequate panel of recently taken material available, it is possible to define the characters and ranges of the three southern races of *S. canicollis* as follows:

(a) *Serinus canicollis canicollis* (Swainson)

Crithagra canicollis Swainson, *Anim. in Menag.*, 1838, p. 317: Africa, restricted to Cape of Good Hope, Cape Province.

♂. Forehead and crown Aniline Yellow (Ridgway, *Color Standards and Color Nomenclature*, 1912, pl. iv); nape, adjacent sides of head, and hind neck Light Mouse Gray (pl. li); mantle and scapulars yellowish Citrine (pl. iv), the feathers with dusky shaft-streaks and grey tips; rump and upper tail-coverts Sulphine Yellow (pl. iv). Below, throat and breast Sulphine Yellow, grading to Lemon Chrome (pl. iv) over the lower breast; abdomen white.

♀. Forehead and fore-crown Pyrite Yellow (pl. iv) with dusky streaking; crown, nape and hind neck brownish-grey, streaked with darker; mantle and scapulars Dull Citrine (pl. xvi), with dark brownish-grey shaft-streaks. Below, Pyrite Yellow over throat and breast, the former surface variably overlaid with grey; abdomen white, and flanks faintly streaked.

Wings (flattened) of 10 ♂♂ 77-82 (78.8), of 10 ♀♀ 74-78 (76.2) mm.

Material: 65. (*Cape:* Clanwilliam Div., Oudtshoorn, Laingsburg, Knysna, Willowmore, Patensie, Uitenhage, Alexandria, Cathcart Div., etc. *Transvaal:* Wakkerstroom [14th October, 1909 (? migrant)].

Range: Western Cape from about Springbok, Little Namaqualand, south to the Peninsula, thence east to the eastern Cape. A single October bird from Wakkerstroom, in the south-eastern Transvaal, suggests some eastward movement on the part of some populations in winter.

(b) *Serinus canicollis thompsonae* Roberts

Serinus canicollis thompsonae Roberts, *Ann. Transv. Mus.*, vol. x, 3, 1924, p. 186: no locality=Woodbush, Tzaneen, northern Transvaal.

♂. As in *S. c. canicollis*, but forehead and crown usually darker and more golden, and rest of upperparts slightly darker. Below, with the throat and breast darker [Citrine (pl. iv)], this dark area more or less sharply defined as a plastron, not merging insensibly into the yellow of the lower breast as in the nominate race. Ventral character even better marked in breeding birds, which may become enriched to Orange-Citrine (pl. iv) over throat and breast.

♀. In fresh dress, rather darker and browner than *S. c. canicollis*, being about Light Brownish Olive (pl. xxx) from head-top to lower back, the shaft-streaking darker and coarser. In worn dress, grey of hind head and neck still retains brownish suffusion. Similar below. Averaging larger.

Wings of 10 ♂♂ 78-83 (80.8) of 10 ♀♀ 76-79 (76.8) mm.

Material: 68. (*Cape:* Barkly East, Dordrecht, Kokstad, Cedarville. *Natal:* Pietermaritzburg, Elandskop, Richmond, Qudeni Forest (Zululand), etc. *Transvaal:* Piet Retief, Carolina, Wakkerstroom, Belfast, Woodbush (Tzaneen), Lydenburg, Groot Spelonken, Dullstroom).

Range: North-eastern Cape along the seaward face of the Drakensberg Range, Natal, western Zululand, western Swaziland, Orange Free State, Lesotho (Basutoland), and the Transvaal highveld.

(c) *Serinus canicollis griseitergum* Clancey

Serinus canicollis griseitergum Clancey, *Durban Mus. Novit.*, vol. viii, 10, 1967, p. 112: Stapleford Forest Reserve, Umtali, eastern Rhodesia, at 5,200 ft. a.s.l.

♂. Forehead and crown greener, less golden than in *S. c. thompsonae;* grey of hind head and neck bluer and colder, less brownish tinged [Neutral Gray (pl. liii)]; ground to mantle and scapulars greener, and more heavily streaked with dusky and overlaid with grey. Face greener. Below, greener, less inclined towards Citrine, over throat and breast (Pyrite Yellow), which not zoned into a plastron as in *thompsonae.*

♀. Characters perhaps better marked than in ♂. Upper parts from crown to lower back cold and grey, not Light Brownish Olive, but intensity of streaking about the same; rump and upper tail-coverts greener (Pyrite Yellow, as against Sulphine Yellow). Below, with yellow surfaces greener, and overlay to throat clearer and bluer, less brownish, grey. A little smaller than *S. c. thompsonae.*

Wings of 10 ♂♂ 73.5-81.5 (77.0), of 10 ♀♀ 74-78 (76.2) mm.

Material: 61. (*Rhodesia:* Melsetter, Banti Forest Reserve, Chimanimani Mts. (Dragon's Tooth area), Stapleford Forest Reserve, Umtali, Inyanga (mainly Gleneagles Estate), lower Pungwe R.).

Range: Eastern highlands of Rhodesia from Melsetter, north to Inyanga, and in adjacent highland Moçambique.

While I have here treated *S. canicollis* and the forms of the *S. flavivertex* (Blanford) group as conspecific, in so doing following Benson and Chapin, I am not convinced that this treatment is correct. It may well be that a more satisfactory arrangement would be to treat *S. canicollis* and *S. flavivertex* and their component forms as two semispecies in a single superspecies. The form of the *flavivertex* group (*flavivertex*, *sassii* and *huillensis*) lack the grey over the hind head and neck, which surfaces are yellowish-olive, heavily streaked with sepia, as the mantle and scapulars. The wings are boldly barred with yellow and black, and ventrally males are more uniformly yellow than in *S. canicollis.* There is some marked variation in the colour of the tail in forms of the *flavivertex* group, the ventral surface of the tail in *flavivertex* being dusky, whereas in *sassii* and *huillensis* the same feathers are yellowish. In the three races of the *canicollis* complex the tail is yellow.

An undescribed subspecies of button-quail from the Philippines

by Kenneth C. Parkes

Received 14th December, 1967

The Ocellated Button-quail *Turnix ocellata*, one of the largest and most colourful members of its family, is confined to the island of Luzon in the Philippines. Like so many other species, it proves to vary geographically within this large and diverse island, having northern and southern subspecies. The type locality of *Oriolus ocellatus* Scopoli, 1786, was restricted to Manila by Hachisuka (*The birds of the Philippine Islands*, vol. 1, part 1, 1931, p. 162), and thus the northern bird is unnamed. It may be called

Turnix ocellata benguetensis, subsp. nov.

Type: American Museum of Natural History No. 544611, adult female from "North Luzon" (= Mt. Data, Benguet Subprovince, Mountain Province, Luzon, Philippines: see Whitehead, *Ibis* 1899, p. 84-85), collected 2nd February, 1895, by John Whitehead.

Characters: Similar to *T. o. ocellata* of Manila and vicinity, but with shorter wing and bill (see list of measurements, below). These button-quail are so variable in colour that it is difficult to distinguish between individual and geographic variation in a limited series. The one consistent character noted in the series examined was the posteriorward extension of the rufous colour of the lower breast and flanks in adults of *benguetensis* of both sexes.

Range: Known only from the highlands of Benguet Subprovince, Luzon.

Remarks: In addition to two pairs of adults collected by Whitehead and now at the American Museum of Natural History (AMNH), I have examined a specimen from Baguio, Benguet, collected by D. C. Worcester on 5th July, 1902, formerly Philippine Museum No. 10430, and now at

Carnegie Museum. This specimen was not sexed by the collector, and a later hand has pencilled "ad ♂?" on the label. Both its plumage characters and its measurements, however, indicate that it is a female just completing what appears to be its first prebasic ("post-juvenal") moult. A specimen in AMNH from north-eastern Luzon (Barrio Dibutuan, San Mariano, Isabela Province) is unfortunately unidentifiable. It was originally sexed as a male, but is not fully adult and may have been mis-sexed, especially as its wing is *longer* than that of any male *ocellata* measured. It is in a plumage not otherwise represented in the AMNH series. If it is, indeed, a female, and if it has attained its full size, it is intermediate between *ocellata* and *benguetensis* in its measurements.

Measurements: T. o. benguetensis: ♀ wing (flat) 97, 97, 98; ♀ culmen (from forehead) 16, 17, 18. ♂ wing 88, 88; ♂ culmen 16, 16·5. *T. o. ocellata:* ♀ wing 105, 105, 108, 108, 108, 110, 111; ♀ culmen 20, 20, 20, 20, 20·5, 20·5, 20·5, 21, 22. ♂ wing 93, 93, 94, 95, 96, 102, ♂ culmen 18·5, 18·5, 18·5, 18·5, 19, 19·5. *T. o. subsp.*? (Isabela Prov.): wing 105, culmen 18·5 mm.

Specimens examined (all from Luzon): *T. o. benguetensis:* "North Luzon" (= Mt. Data, Mountain Province), 4; Baguio, Mountain Province, 1. *T. o. ocellata:* Bataan Province, 9; Bulacan Province, 2; Laguna Province, 1; "Manila" (including market birds), 3. *T. o. subsp.:* Isabela Province, 1.

ACKNOWLEDGMENTS

This study was based principally upon the specimens in the collection of the American Museum of Natural History, New York. I am grateful to Dr. Dean Amadon for extending to me the use of the facilities of that institution.

Notes on the Ocellated Rail (*Micropygia schomburgkii*) with first record from Central America

by ROBERT W. DICKERMAN

Received 1st December, 1967

On 9th March, 1967, the author, accompanied by Larry Wolf and Lloyd Kiff, was collecting the wedge-tailed Grass Finch (*Emberizoides herbicola*), at Buenos Aires, Puntarenas Province, Costa Rica, when a small rail was flushed and collected. The bird, which proved to be a female in basic plumage and with small gonads, was readily identified as an Ocellated Rail, *Micropygia schomburgkii* (Richard Schomburgk) by reference to *The Birds of Colombia* by R. Meyer de Schauensee, (1964). It is the first record of this monotypic genus for Central America.

The species is currently divided into two forms, the nominate subspecies, described from Venezuela and recorded from Colombia, French Guiana and Guyana; and *M. s. chapmani*, from the Matto Grosso of Brazil. In order to evaluate the geographic variation within the species and to identify subspecifically the Costa Rican specimen, I attempted to obtain on loan all available specimens. Twelve museums in the United States were contacted and a total of 30 specimens assembled, 27 from the American

Museum of Natural History! Three additional specimens, formerly in the American Museum of Natural History series, were not seen. Only two specimens of *chapmani* were seen, including the type. Measurements are in millimetres.

GEOGRAPHIC VARIATION

The wide ranging *M. s. schomburgkii* is a highly variable subspecies, ranging from lightly to heavily spotted on the back and varying from greyish-olive to ochraceous brown in basic coloration of the interscapular area. There is no discernable geographic variation in the coloration of the underparts throughout the species' range. The variation in the extent of the spotting on the head (Fig. 1) is in part accounted for by sexual dimorphism discussed below. Eleven males measure: wing chord 72-76 (74·2) culmen from nostril 7·4-8·3 (8·0); 13 females measure, wing chord 69-76 (73·5), culmen from nostril 7·6-8·4 (7·8).

The Costa Rican specimen is closest to *M. s. schomburgkii* but has more extensive black borders of the dorsal spots than any of 28 specimens of that form. In Fig. 1, the Costa Rican specimen is shown with a more heavily-than-average spotted specimen of *schomburgkii* in the centre and the type of *chapmani* on the right. Its measurements, wing chord 69, culmen from nostril 7·4, are at the small extreme for measurements of the nominate form. With but a single specimen from Central America one does not know if it represents an extreme within the normal variation of *schomburgkii* or a representative of a consistently darker population that remains to be described when further specimens are available. The Costa Rican specimen was deposited in the collection of the American Museum of Natural History.

One unsexed specimen from San Joaquin, Beni Province, Bolivia, the first record for that country, with culmen from nostril 8·3 and wing chord 73, is typical *schomburgkii* in amount of spotting and grey-brown coloration.

M. s. chapmani was described (Naumburg 1930) from a single male specimen, compared with three specimens of *schomburgkii*, as being larger throughout; with the bill longer and more slender, general coloration "umber brown" instead of "sepia brown", with dorsal spots more ovate and smaller, these having a narrower black border. Spotting was lacking on the rump and the upper tail-coverts. The tail was uniform without either darker or white markings, and the underparts were paler with ochraceous coloration more extended.

Hellmayr and Conover (1942), based on three Brazilian specimens, two from Bahia on the coast and one from Goyaz in the Matto Grosso, did not consider any size character, smaller spotting, or absence of spotting on lower back and rump to be consistent as racial characters as compared to three specimens of the nominate race. Unfortunately they did not discuss dorsal coloration. Assuming Conover and Hellmayr measured wing chord, their measurements of three specimens, 79-82, fall outside the measurements of 24 specimens of *schomburgkii* as does the type with wing chord 83. Likewise, the bill measured from nostril of the two specimens I have examined (9·0 and 8·7) is larger than in the nominate form.

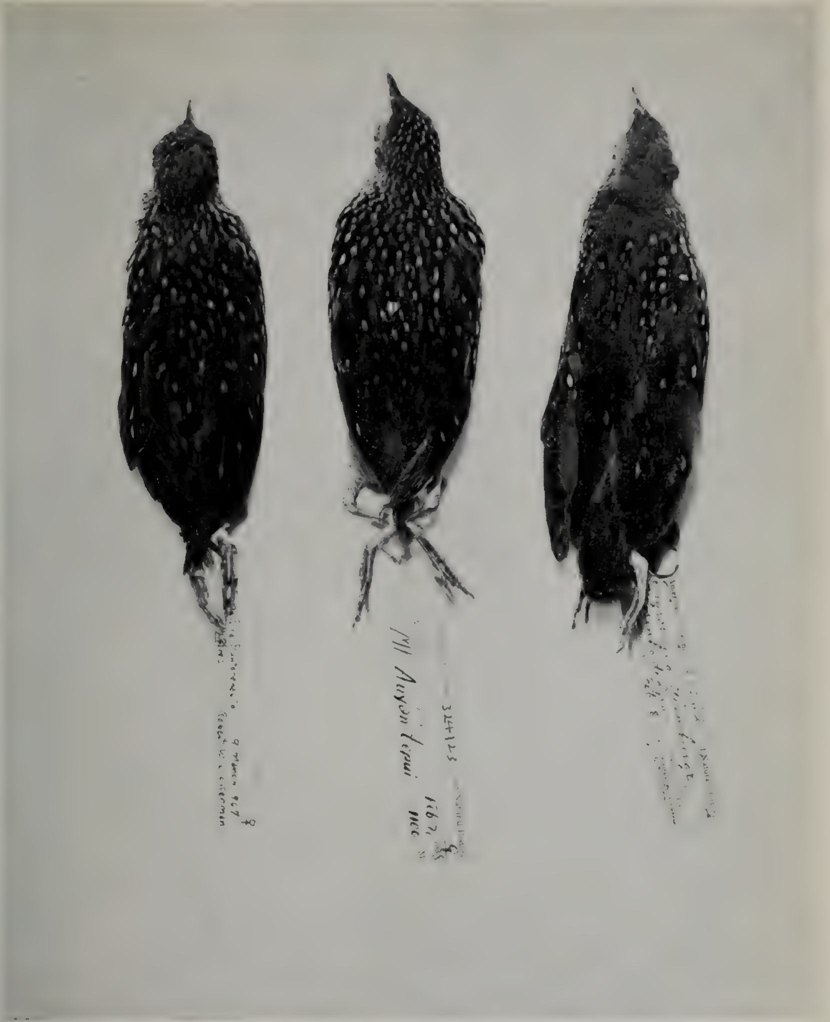

Fig 1. Dorsal view of Ocellated Rail (*Micropygia schomburgkii*). Left: Costa Rica; Middle: A heavily marked specimen of *M. s. schomburgkii* from Venezuela and Right: Type of *M. s. chapmani*.

One recent specimen of *chapmani*, a male from Serra dos Parelis, Rio Jamare, Matto Grosso, collected "3/9/1940", wing chord 73, is very similar in coloration to the type, with spotting reduced in number and lacking on rump (tail is missing). In the sparseness of the dorsal spotting, this specimen and the type are matched only by one specimen of *schomburgkii*. Only two of 28 specimens of the nominate form lack or have obsolete rump spotting, and in general dorsal coloration, only five of the series of *schomburgkii* are as richly ochraceous brown as are the two *chapmani*. Pinto (1964) described a female from Itatiba (east of San Paulo) (wing 80) which also lacks spots on upper tail-coverts and with those on rump reduced in size and numbers.

In summary, *M. s. chapmani* may be distinguished from the nominate form by generally more orange-brown coloration, reduced dorsal spotting (often these are absent on rump and upper tail-coverts) and probably larger size, especially wing chord. The Costa Rican specimen may represent an undescribed population with abundant spotting having broader black borders than those of nominate *schomburgkii*.

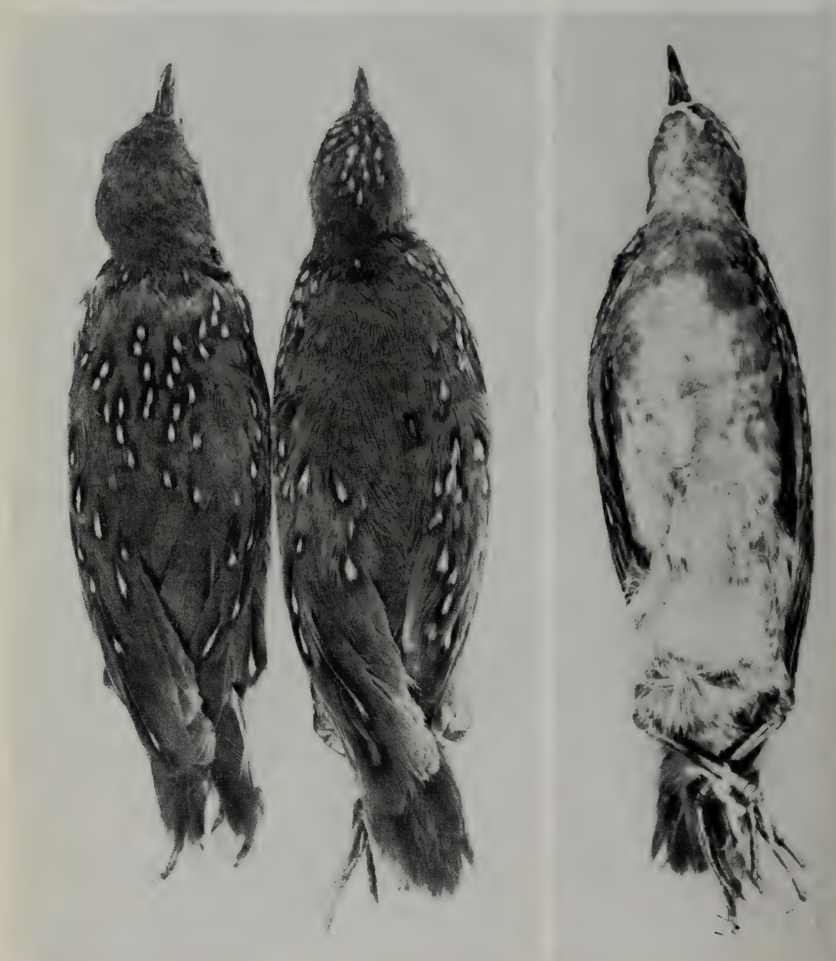

Fig 2. Dorsal and ventral views of specimens of *Micropygia schomburgkii* from Venezuela in post-juvenile moult.

JUVENAL PLUMAGE

In the series of 18 specimens collected January and February, 1938 from Mt. Auyan-tepui, Venezuela, in the American Museum of Natural History collection, there are three specimens that retain some juvenal plumage, which apparently has not been described previously. Ventrally (Fig. 2) the juvenile is more extensively white or cream coloured, with only a pale and diffuse ochraceous band across the breast and along the flanks. The sides and flanks are lightly barred with medium grey. Dorsally they are a uniform grey-brown (right-hand bird in Fig. 2), with adult-type spotting of the juvenal plumage restricted to wing-coverts, shoulders and upper sides, extending on to sides of neck. The top of the head may apparently be plain or spotted.

SEXUAL DIMORPHISM

There is a slight sexual dimporhism in head coloration. Males tend to have less spotting on head, with a more extensive rich ochraceous brown forehead and crown. Dividing the series into four classes based on crown: 1. head essentially uniformly rich brown, 2. cap extends to behind eyes, 3. spotting ends at eyes with only forehead without spotting, and 4. spotting covers entire forehead to bill base. The males divided into these groups 2, 7, 1, 0 respectively, while the females were 0, 2, 6, 4.

SOFT PART COLOURS

The colours of soft parts as noted on eight adults of the Mt. Auyantepui series collected during January and February do not show sexual dimorphism. Upper mandibles ranged from horn to brown to black, with light bluish-grey line running from nostril to base and with a bluish-grey or greenish-blue edge. Lower mandibles were recorded as greenish to horn at tip or light blue-grey. The feet were salmon or orange-red and iris colour was recorded as orange, reddish-brown or coral red.

ECOLOGY AND PHENOLOGY

It is interesting to note that in January and February, during the dry season in Venezuela, as in Costa Rica, the rail was collected in parched tropical savanna together with *Emberizoides herbicola* (Gilliard 1941). In Venezuela the savannas were bordered by marsh areas. In Costa Rica, specimens of both species were collected in tall grass along dry drainage channels, indicating considerably moister conditions during the rainy season (June to October-December). In March one of the *E. herbicola* from Costa Rica still retained a partially unossified skull indicating nesting probability at the height or after the height of the rainy season. This is in contrast to dry season nesting of two other South American species which also reach their limits in these same tropical savannas of southwestern Costa Rica. On the same date in March, an adult female Lesser Elaenia (*Elaenia chiriquensis*) was collected from a nest containing one young 2-3 days old, and a fully grown and fledged juvenile Pale-breasted Spinetail (*Synallaxis albescens*) was collected.

ACKNOWLEDGMENTS

The Costa Rican specimen was collected during a field exercise of the Organization for Tropical Studies. The author wishes to thank the curators of the Field Museum of Natural History, Chicago; Los Angeles County Museum and U.S. National Museum for the loan of specimens from the collections of those institutions. Dr. Dean Amadon provided free access to the collections of the American Museum of Natural History.

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Taxonomic notes on African birds

by C. M. N. White

Received 11th December, 1967

The present completes notes on material in the Cape Town Museum and National Museum, Bulawayo in 1966.

Eurocephalus anguitimens Smith

Examination of large series does not convince me that the southern African nominate form can be subdivided by the recognition of *E. a. niveus* Clancey, 1965, Arnoldia, 1, no. 23, p. 2; Newington, Transvaal.

Phyllastrephus flavostriatus (Sharpe).

I am satisfied that *P. f. dendrophilus* Clancey, 1962, Durban Mus. Novit. 6, p. 152. Chimanimani Mt., Rhodesia is a valid form. It differs from the nominate form in having the crown dusky olive-grey, less sharply demarcated from the mantle, and the latter is more brownish-olive, less green. Its range is the highlands of eastern Rhodesia from Vumba to Inyanga.

Apalis thoracica (Shaw & Nodder).

Examination of much more material since my 1962 review makes it desirable to recognise additional forms and amend the details of some others in southern and central Africa. In the south-west Cape Province three forms are valid. The population west of the mountains from Cape Town to Lamberts Bay lacks green on the upperside and has pure grey flanks and should stand as *A. t. griseopyga* Lawson, 1965, Ostrich, p. 4: Kersenfontein, Berg River. East of the mountains from Paarl to Mossel Bay *A. t. capensis* Roberts, has a green wash on the lower back and slightly more olive-grey flanks. Still further east from Beaufort West and Knysna almost to Humansdorp the upperside exhibits a brownish-olive wash on the mantle, more olive-brown flanks and some rusty wash on the middle of the underside. These should stand as *A. t. claudei* Sclater.

Further east from Humansdorp to the Kei River occurs the rather different nominate form with olive-green mantle, pale yellow underside below the black collar and greyish-olive flanks. East of the Kei River to Natal it is replaced by the very similar *A. t. venusta* Gunning & Roberts in which the throat is tinged with yellow and not clear white.

The two forms *A. t. lebomboensis* Roberts and *A. t. drakensbergensis* Roberts both differ from *venusta* in their green, not grey crowns. *A. t. spelonkensis* is brighter above than *venusta* and has a darker, more grey-brown crown.

In Rhodesia, Mocambique, Zambia and Malawi two additional forms must be recognised. *A. t. quarta* Irwin, 1966, Durban Mus. Novit. 8, p. 51: Gorongoza Mountain, Mocambique is a well marked form nearest to *arnoldi* above but with more dusky olive mantle and darker brown cap; below more like *rhodesiae* in the small amount of yellow on the lower abdomen which is slightly infused with brownish-olive, whilst the rest of the underside below the breast-band is greyish-white rather than creamy. Only known from the type locality.

Populations of Zambia and Malawi which I formerly united with *arnoldi*, I now think should stand as *A. t. whitei* Grant & Praed. The green on the upperside is rather variable, most marked in birds from Malawi, but below they are more like *rhodesiae* but with the throat and area below the black collar greyish-white rather than creamy, and the lower abdomen slightly more greenish-yellow. In 1962 I assigned the population of Ufipa, Tanzania to *A. t. murina* Reichenow. Others have referred these birds to *A. t. youngi* Kinnear. In material which I have compared, the sides of the lower abdomen are olive-buff rather than white, but Mrs. Hall kindly informs me that the material in the British Museum (Nat. Hist.) is too close to *youngi* for separation. The lower abdomen in *murina* is pale yellow.

Apalis flavida (Strickland)

In 1962 I united *tenerrima* Grote with *neglecta* (Alexander). The former has a grey crown and nape whilst in the latter the hind crown and nape are green. More recently an additional form, *A. f. canora* Lawson, 1962, Bull. B.O.C. 82, p. 134: Sumbu, Abercorn, Zambia has been proposed for a grey-crowned bird. I have again examined these forms and find that over most of their ranges *neglecta* and *tenerrima* are constant but that in northern Zambia from the Lungwevungu River and Mwinilunga in the west to the Copperbelt, the Luapula Valley and Abercorn is a belt where both types and intermediates occur.

Remiz minutus gigi (Winterbottom).

I have examined two of the three specimens upon which this form was based. They are distinctly browner and less grey above than the nominate form and markedly more brownish-buff below. Although only known from the type-locality, on present evidence this is a valid form.

Note: Mr. Clancey is quite correct (*Bull. B.O.C.* 87, p. 93) in saying that I misquoted the type locality of his *Lonchura c. tessellatus*. The error is regretted

A preliminary report on the relationships of the indigobirds

by Robert B. Payne

Received 26th October, 1967

The African parasitic finches of the *Hypochera* group, the indigobirds or combassous, form a complex of variation which has proven to be unresolvable by the investigation of museum specimens alone. As each recent taxonomic review of the group has noted of its predecessors, the 14 described forms of indigobird consist of a hitherto unresolved number of species. The extremes of variation in the interpretation of species relationships of the birds suggest that all belong to a single, most variable species (White, 1963; Traylor, 1966 *sans* footnotes) or to as many as eight distinct species, some of them polytypic (Mackworth Praed and Grant, 1949). All the indigobirds (here considered to comprise the subgenus *Hypochera* of the genus *Vidua*) have male breeding plumage of black which is more or less iridescent with green, blue or purple. The females have generally been considered morphologically indistinguishable, although Mackworth-Praed and Grant (1949, 1960) and Roberts (1939) state without any explanatory remarks that females attributed to some forms differ from those of others. Some forms of indigobird have characteristic bill and foot colours. Taxonomic studies based on museum specimens have been limited by the failure of some collectors to note the bill and foot colour of specimens on the label at the time of collection. These colours change rapidly, within a day or two, after death and are not recognizable in museum specimens more than a few weeks after collection. Even more, taxonomic reviews of the indigobirds have not had available, until recently, any information on the biology of the living birds. Attempts to force the observed pattern of variation of the indigobirds into the concept of biological species have failed for this reason, and perhaps more significantly they have failed because these birds are better considered a group of cultural species.

I carried out extensive studies of the indigobirds in the field in five countries of Africa for two years (1966 and 1967). This field work is being continued and a comprehensive description of the field observations and a revision of the group are being prepared. Since this work will not be completed for some time, it seems advisable to present a preliminary statement on certain results of the field work in the possibility that it will lead other field workers to get the fullest information from their own studies. Future collecting of the indigobirds will be of little value unless the colours of the soft parts are noted at the time of collection. Future field work on the song of indigobirds and of their *Lagonosticta* song models will be of little use unless the singing birds are examined in the hand for species identification.

An operant description of the relationships of indigobirds has become possible largely because of the discovery by Nicolai (1964) that many viduines, including *Hypochera*, mimic the songs of their estrildine hosts. Nicolai found that each species of mimicking viduine sang the song of one and only one species of estrildine, in each case the known or suspected host species. He (Nicolai, 1967), D. N. Mansfield (MS cited in Traylor, 1966; also in personal communication) and I have heard all vocal mimicry of the host song by these viduines in the field in Africa, thereby indicating that the mimicry reported by Nicolai of captive birds imported into Germany was not in fact a behavioural artifact of captivity. I have subsequently found during field observations of behaviour that mate selection by the female indigobirds is based on the host mimetic phrases of the song of the males. Since the mimicking viduines—both males and females—are apparently imprinted on the song of the host species by hearing the vocalizations of their foster parents and their host nestmates, the mechanism of behavioural isolation is one that is culturally transmitted by another species, not by their own parents. The extensive tape recordings which I made in the field and also the observations of behaviour and mate selection will be reported elsewhere. This brief description of the significance of host mimicry will permit the following discussion of the relationship of certain populations of the indigobirds.

Field studies were carried out using the following approach: singing males were tape-recorded, females mating with these birds were collected for specific identification and the recorded males were then collected and examined. The *Lagonosticta* species associated with each locality were observed and in several instances their songs were recorded and individuals were collected to verify the field identification. The relative abundance of the different forms of the indigobirds and of the firefinches were noted to provide evidence of the quantitative correlation of the geographical distributions of parasite and host. Because mate selection is based on the mimic song, forms of indigobirds which mimic the same species of host are themselves members of one traditional cultural species. This phenetic definition of cultural species is valid as a description of the genetic identity of populations regardless of the evolutionary history of each population. The results of the field study are briefly summarized in table 1.

The first important feature to note in table 1 is that three, not two, species of *Hypochera* occur in South Africa. The purplish-blue glossed, white-billed indigobirds of the Transvaal comprise two distinct species. One has red feet and mimics *L. rubricata* as does nominate *V. funerea* in Natal. As close as 30 miles from this population at Tzaneen, downstream from it along the Letaba River and in the more arid woodland of the Transvaal lowveld at Hans Merensky Nature Reserve, white-billed indigobirds have white feet and mimic *L. rhodopareia jamesoni.* White-footed males and red-footed males overlap completely in geographic range without any observed occurrence of birds with an intermediate pink or light orange foot colour. The overlap in range is readily apparent in the south-to-north alternation of white-footed birds and red-footed birds from Natal to Marble Hall to Tzaneen to Merensky to eastern Rhodesia. The morphological distinction between the two has been overlooked in the past (except by Roberts, 1939) because collectors in South Africa have generally neglected to note foot colour of specimens on the labels. As late as July, 1967, none of the 35 indigobirds in the collection of the Durban Museum had bill colour or foot colour recorded. The information about the one known morphologically differentiating character of the species is now permanently lost from such specimens.

The white-footed indigobirds of South Africa and of the remainder of Africa south and east of the Congo forests, as far as is now known, are best considered as members of the species *V. purpurascens.* The east

TABLE 1

Species relationships of the indigobirds of southern and eastern Africa

Locality	Described form	Song mimicked	Occurrence of *Lagonosticta*	Species of indigobird
South Africa				
Hluhluwe	funerea	rubricata	rubricata	funerea
Ndumu	amauropteryx	senegala	senegala	chalybeata
Marble Hall	*amauropteryx	senegala	senegala	chalybeata
	“funerea” (white feet)	rhodopareia	rhodopareia	purpurascens
Tzaneen	*funerea	rubricata	rubricata	funerea
Merensky	*“funerea” (white feet)	rhodopareia	rhodopareia	purpurascens
	*amauropteryx	senegala	senegala	chalbeata
Botswana				
Maun	*(chalybeata)	senegala	senegala rhodopareia	chalybeata
Rhodesia				
Lusitu	(funerea)	rubricata	rubricata	funerea
	“funerea” (white feet)	rhodopareia	rhodopareia	purpurascens
Sabi Valley	*amauropteryx	senegala	senegala	chalybeata
	*“funerea” “white feet”	rhodopareia	rhodopareia	purpurascens
Salisbury Atlantica	“funerea” (white feet)	rhodopareia	rhodopareia senegala	purpurascens
Penhalonga	*“funerea” (white feet)	rhodopareia	rhodopareia	purpurascens
	*purpurascens		rhodopareia	purpurascens
	*codringtoni	rubricata	rubricata	funerea
	*amauropteryx	senegala	senegala	chalybeata
Malawi				
Chileka	amauropteryx	senegala	senegala	chalybeata
Zomba	*codringtoni	rubricata	rubricata rhodopareia	funerea
	*purpurascens	rhodopareia	rhodopareia	purpurascens
Monkey Bay	*amauropteryx	senegala	senegala rhodopareia	chalybeata
	*(purpurascens)	rhodopareia	rhodopareia	purpurascens
Lilongwe	amauropteryx	senegala	senegala	chalybeata
Lilongwe Airport	*(purpurascens)	rhodopareia	rhodopareia	purpurascens
Salima	amauropteryx	senegala	senegala	chalybeata
Kenya				
Malindi	*(amauropteryx)	senegala	senegala	chalybeata
Nairobi	*centralis	senegala	senegala rubricata	chalybeata
Olorgesailie	*centralis	senegala	senegala	chalybeata
Kisumu	*centralis	senegala	senegala	chalybeata
Sigor	*(purpurascens)	rhodopareia	rhodopareia	purpurascens
	*centralis	senegala	senegala	chalybeata

* Asterisk indicates tape recordings of singing indigobirds.

African nominate *purpurascens* has a geographical distribution which corresponds *L. rh. jamesoni* in general. On the other hand the earlier name *nigerrima* has been applied in the past to the white-footed indigobirds of

Zambia and Malawi. However, topotypical *nigerrima* from north-western Angola—on historical grounds the probable type locality—corresponds in distribution not with *L. rhodopareia* but with *L. landanae*. Furthermore, these north-western Angola indigobirds have red, not white, feet. The names *purpurascens* and *nigerrima* thus appear to refer to different species.

The form *codringtoni* occurs in eastern Rhodesia as well as in Malawi and Zambia. Six adult males, five of them green and one more blue than green, were taken at Penhalonga in eastern Rhodesia. Each of the males mimicked the song of *L. rubricata*. *Codringtoni* is therefore a form of *Vidua funerea*. These green birds intergrade through an intermediate blue population along the lower Lusitu River in eastern Rhodesia with the purplish-blue nominate *V. f. funerea* of South Africa. The occurrence of *codringtoni* in Rhodesia (previously not known) was discovered as the result of a test of the "three species concept" of the indigobirds. It appeared probable that three species of indigobirds lived in Rhodesia if there were indeed three species in South Africa because the same three species of *Lagonosticta* (*L. senegala. L. rhodopareia*, *L. rubricata*) are common to these areas. In South Africa the red-footed *V. f. funerea*, mimics of *L. rubricata*, are geographically restricted to the moist habitats of the eastern Cape Province and northward and eastward along the continental escarpment, the range and habitat of this species of firefinch. In Rhodesia *L. rubricata* is restricted to the moist eastern border of the county (Benson and Irwin, in press). It was predicted that in areas of eastern Rhodesia a white-billed, red-footed indigobird would occur and would mimic the song of *L. rubricata*. The prediction was verified at Penhalonga and at the Lusitu River with the finding of *codringtoni* and the population intermediate between this form and nominate *V. funerea*.

Codringtoni has been considered by Traylor (1966) and by Nicolai (1967) to be a form of *Vidua chalybeata*. Traylor's consideration was based on the conception of the indigobirds as forming two species in southern Africa. He noted that the white-billed forms in Malawi and eastern Zambia were of two distinctly different kinds, one with red feet (*codringtoni*) and one with white feet. The plumage of these forms differed also within this circumspect area. Having apparently only two species available for the designation of aberrant forms, *V. chalybeata* was regarded as the more probable close relative of *codringtoni*. However, throughout the geographical range of *codringtoni* occurs another race of *V. chalybeata*: *V. c. amauropteryx*. This red-billed form mimics the song of *L. senegala*, (see table 1). More direct evidence for the parasitism than mimicry alone of *L. senegala* by *V. c. amauropteryx* is available for southern Africa, and Morel (1962) has made extensive observations of the parasitism of *L. senegala* by *V. c. chalybeata* in west Africa. Clearly two subspecies of the same species cannot by definition have the same geographical ranges. Thus *codringtoni* cannot be a subspecies of *V. chalybeata* in the exact same localities where *V. c. amauropteryx* occurs. The field observations and tape recordings of *codringtoni* as well as the finding of populations with the same song intergrading with *V. f. funerea* clearly establish *codringtoni* as specifically distinct from *V. chalybeata*, and as conspecific with *V. funerea*.

Nevertheless, Nicolai (1967) has just reported that *codringtoni* in Tanzania mimics the song of *Lagonosticta senegala*. His reports of mimicry, like the claims of the present preliminary report, are not documented by sonograms of the songs. There can be little doubt from his earlier work with *L. senegala* (Nicolai, 1964) that he did record an indigobird mimicking this firefinch. However, museum specimens indicate that in central Tanzania two distinct populations of greenish to bluish, white-billed, red-footed indigobirds occur, both *V. f. codringtoni* and also *V. chalybeata* populations sharing characters of the southern race *amauropteryx* and the race to the north, *centralis*. Inasmuch as none of the reported "*codringtoni*" were apparently collected after their songs were recorded, it is not possible to know which form of the cryptic sibling species of indigobirds were actually recorded.

Similarly, the identification by Nicolai (1967) of the mimicry of the song of *L. rubricata* by the form of indigobird he called *purpurascens* is open to question. In this instance I question the identification of the firefinch. Both *L. rubricata* and *L. rhodopareia* have trilled phases in their songs. No distinction is made between these songs but rather a distinction is made between trilled songs in the species in question and the absence of varied phrases in *L. senegala*. From the photograph of the rather dry habitat where the tape recordings were made (Nicolai, 1967: fig. 1). it seems likely that the local species of trilling firefinch is *L. rhodopareia*, not the more mesophyllic *L. rubricata*. Collection of the local forms of firefinch or publication of the differences in song of the firefinches and the indigobirds would permit this question to be resolved.

It is here suggested that the form *purpurascens* is a distinct species. The sample of males recorded and collected in eastern Rhodesia and in Malawi included several purple birds with white feet and white bills. These agree in morphological characters with *purpurascens* from Tanzania in museum collections. All of these birds recorded in the field mimicked the song of *L. rhodopareia jamesoni*. A system of relationships based on the mimic song includes the white-footed, less glossy birds of southern Africa in *V. purpurascens*.

Collectors, please record the bill and foot colour. Recorders, please identify the birds by collecting them and comparing them with properly identified museum specimens.

For their helpful suggestions in the course of the study I am grateful to D. M. Eccles, M. P. S. Irwin, M. A. Traylor, C. M. N. White, J. A. Williams and J. M. Winterbottom. Field work was supported by a research fellowship from the National Science Foundation.

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Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

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DINNERS AND MEETINGS FOR 1968

20th February, 19th March, 16th April, 21st May (provisional).

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March
1968

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BULLETIN
OF THE
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Number 3

Published : 8th March 1968

The six hundred and forty-ninth meeting of the Club was held at the Rembrandt Hotel, London, on the 20th February, 1968.

Chairman: Dr. J. F. Monk.

Members present: 17; Guests 5.

Mr. Michael Fogden gave a talk, well illustrated with coloured slides, on some birds of Borneo and their role among some of the tribes as augurial agents.

On the birds of the Pjorsarver district in central Iceland, with special reference to the Pink-footed Goose

by S. R. Pepper

Received 16th February, 1968

An expedition from Radley College, Berkshire, visited the Pjorsarver oasis in central Iceland during August, 1966. It spent five weeks in the area, shown in the sketch map, investigating the feeding habits of the Pink-footed Goose, *Anser fabalis*.

The movements of the expedition were as follows:—

Fossrofuloekur (base-camp) ..	31st July	—	8th August
Hveravellir	9th August	—	15th August
Nauthagi, Pjorsarver	17th August	—	24th August
Fossrofuloekur	26th August	—	29th August
Hvervellir	29th August	—	4th September

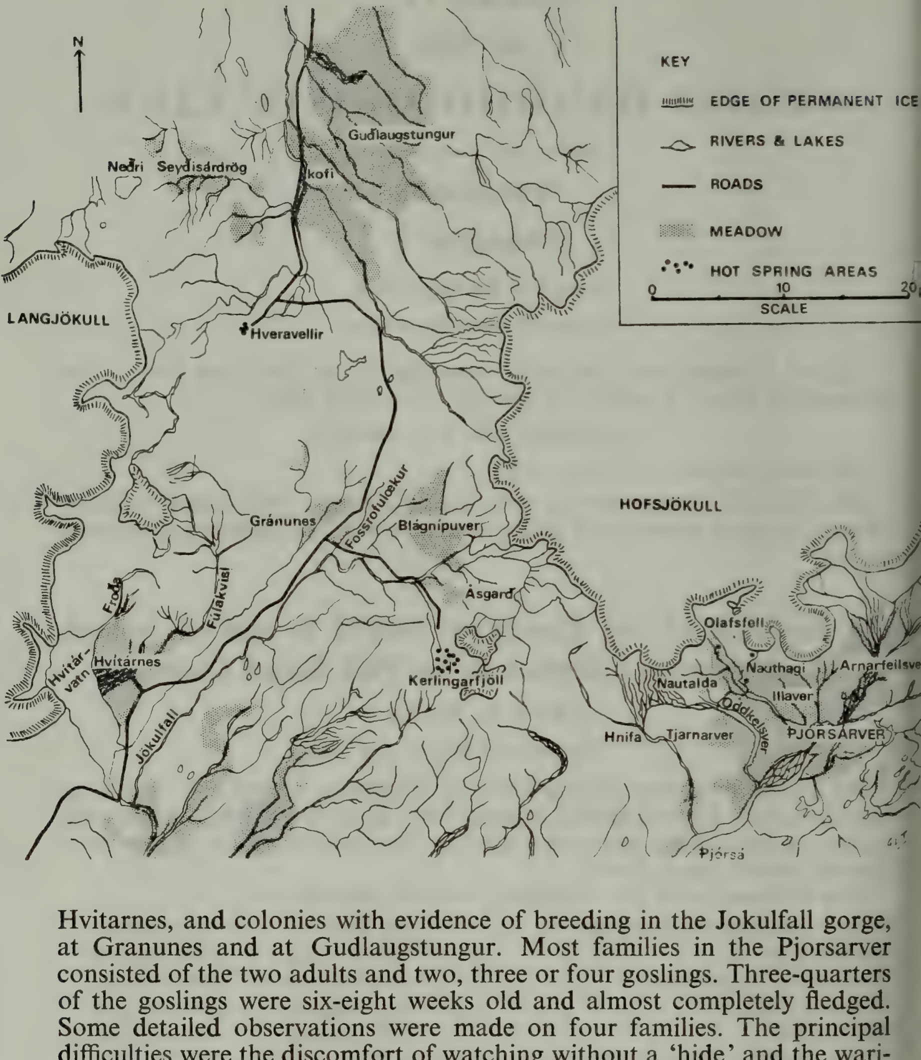
Twenty-five species of birds were seen in Pjorsarver.

Red-throated Diver, *Gavia stellata*

Seen once in the Pjorsarver: a single bird, at Arnarfellsver on 21st August. Elsewhere also only once: at Gudlaugstungur on 12th August, when three were seen at close range, fishing in a tributary of the Blanda river.

Pink-footed Goose, *Anser fabalis*

The commonest bird in the Pjorsarver, breeding in very large numbers. Non-breeding colonies of young adults found in Blagnipuver and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Gránunes
Blágnípuver
Ásgarð
Fróða
Fúlakvísl
Hvítár-vatn
Hvítárnes
Jökulfall
Kerlingarfjöll
Olafsfell
Nauthagi
Arnarfellsve
Nautalda
Illaver
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Hvitarnes, and colonies with evidence of breeding in the Jokulfall gorge, at Granunes and at Gudlaugstungur. Most families in the Pjorsarver consisted of the two adults and two, three or four goslings. Three-quarters of the goslings were six-eight weeks old and almost completely fledged. Some detailed observations were made on four families. The principal difficulties were the discomfort of watching without a 'hide' and the wariness of the geese.

Detailed observations were also made on a group of five goslings, unaccompanied by adults. Such groups were common, apparently not the result of human disturbance, and far easier to observe without the adults.

The families were watched for about three-quarters of an hour each. The group of unaccompanied goslings was watched closely for seven hours on 21st August and general observations were made on the following three days.

The goslings were always either preening or feeding. When with adults, they usually kept within ten yards of one adult and only stopped feeding to keep up with the movements of the family. Unaccompanied goslings would continue to feed unconcerned until one approached within fifteen yards. However, adults with or without goslings, would move away at the first sight of humans. Without goslings they usually took flight: with goslings they usually ran off, often faster than the goslings could follow, so that adults and goslings at times became separated by as much as fifty yards. The goslings of a family always remained a group, not more than five yards across, which became smaller when they were occupied with preening.

Preening played an important part in the gosling's life, and the group of unaccompanied goslings under observation preened synchronously at times separated by 70, 70, 75, 75 and 80 minutes in that order. The preening sessions lasted 17, 17, 12, ten and seven minutes. Overall, therefore, the goslings spent approximately 15 per cent of the 18 daylight hours preening and 85 per cent feeding.

Goslings with adults behaved similarly. In the single family that appeared to be totally unaware of the observers, the adults were preening at the start of the period of observation. During the next hour they spent (respectively) eight and eight minutes preening, 12 and nine minutes motionless, and ten and 13 minutes feeding. and they were feeding as they passed from view. This suggests that adults spend less time feeding than goslings and more time motionless (*i.e.* on watch). In the other families watched, when the adults were clearly aware of the observers, they did not preen and fed only intermittently.

During the four days of observation, the group of unaccompanied goslings confined themselves to an area about 200 yards long and 150 yards wide, between the river Miklavisl and Nautalda, which they covered thoroughly every day. Every morning the goslings moved onto the dry ground of the lower slopes of Nautalda, where they fed exclusively on the Crowberry, *Empetrum nigrum* for about three hours, returning afterwards to the wetter ground.

Whooper Swan, *Cygnus cygnus*

Common in all districts: estimated number in Pjorsarver, 15 pairs (three pairs with cygnets). Outside Pjorsarver at least one pair in each meadow visited. In Gudlaugstungur, a non-breeding colony of about 40 birds was found on a small lake, the banks of which were littered with discarded feathers.

Whooper Swans were always wary, particularly so when with cygnets, and they were only approachable when on the water, where they would stay in case of danger.

One very late family was recorded on 9th August in Oddkelsver; the adults were still unflighted and their cygnets were the youngest seen.

In all, 31 pairs were seen; nine pairs had cygnets; three pairs had four and six had three.

Mallard, *Anas platyrhynchos*

Only once observed in the Pjorsarver, a single bird at Oddkelsver on 19th August. Otherwise seen on three occasions. Many Mallard seen on a trip to Myvatn in the north of Iceland at the beginning of September.

Wigeon, *Anas penelope*

One seen in a meadow by Nautalda on 22nd August.

Pintail, *Anas acuta*

Present in very small numbers. Three in Oddkelsver on 19th August; four seen at one time in Illaver on 20th August, another in the same area the next day and another at Nauthagi on 22nd August.

Only seen once outside Pjorsarver, at Gudlaugstungur on 13th August (four birds).

Long-tailed Duck, *Clangula hyemalis*

Common in Pjorsarver and gregarious at time of visit. A flock of 27 birds seen on a pond in Oddkelsver on 19th August, and small groups in Illanver and Tjarnarver on 21st and 24th August. Several were males in breeding, plumage. Not uncommon in meadows outside Pjorsarver but mainly in pairs or singly.

Iceland Falcon, *Falco rusticolus*

Single birds seen on several occasions around Nautalda, sometimes perching on a cairn at the top where pellets were found, presumably of this falcon and of Merlin.

On 22nd August some members of the expedition disturbed an Iceland Falcon killing a four-week-old gosling. Having attempted, without success to fly off with its prey, the falcon waited on a nearby rock for some time before eventually disappearing.

It was presumed that a pair was nesting in Jokulkriki, which would account for all our sightings of Iceland Falcons in the Pjorsarver.

The gorge of the Jokulfall, just upstream of its confluence had many geese nesting on the brink of the gorge, and on two occasions a single falcon was seen to fly into the gorge and out of sight, but no nest was found.

Merlin, *Falco columbarius*

A single bird was seen on several occasions around Nautalda, perhaps a pair. Several Merlin pellets were found by a cairn on the top of Nautalda, where one was perched on 17th August. Probably resident and breeding.

Only one Merlin was seen outside Pjorarver, at Fossrofuloekur on 4th September, chasing a Meadow Pipit.

Ptarmigan, *Lagopus mutus*

This bird was not seen in the Pjorsarver, though droppings were found on Nautalda and Oddkeslalda. This was certainly not a 'Ptarmigan Year'. but four families were seen outside the Pjorsarver, on the 7th, 12th, 13th and 31st August, broods numbering four, five, four and four respectively. Both adults were seen on two occasions. A brood seen at Gudlaugstungur on 12th August was just flighted.

Ringed Plover, *Charadrius hiaticula*

Present, but not common; two adults and a juvenile seen frequently on Nautalda.

Otherwise one bird seen at Geysir on the inward journey and one at Hveravellir Hot Springs on 10th August.

Golden Plover, *Pluvialis apricaria*

Ubiquitous in central Iceland. Certainly the commonest bird outside the Pjorsarver. Many large flocks in Pjorsarver, numbering hundreds of birds. On 19th August, one large flock of about 80 birds was accompanied by some 50 Dunlin. These birds are frequently observed together, but the basis of their very marked relationship remains obscure.

Earlier, seen always as individuals or in very small flocks not exceeding ten birds. Many juveniles seen here and a long-abandoned nest with three dead chicks found in Asgard on 7th August. Innumerable birds seen almost every day in central Iceland until 24th August, after which only one flock recorded, heard overhead on the night of 30th August, at Hveravellir.

Purple Sandpiper, *Calidris maritima*

Individuals seen in Pjorsarver on three occasions. Also four times outside Pjorsarver.

Dunlin, *Calidris alpina*

Dunlins were very common in Pjorsarver and frequently seen in large flocks, often accompanying Golden Plover. Common also in the meadows of the Kerlingarfjoll and Hveravellir districts, but not recorded at all after the visit to Pjorsarver, *i.e.* after 24th August.

Whimbrel, *Numenius phaeopus*

One heard at night at Nauthagi Cold Springs on 19th August, and a pair seen in Nauthagi on 21st August. Elsewhere only once; at Hvitarnes on 6th August, where more than 20 birds were seen in the very marshy area east of the lake.

Snipe, *Capella gallinago*

Seen only in Pjorsarver (except two individuals in Gudlaugstungur on 13th August). A pair in Nathagi, seen together once on 21st August, and one of which seen almost daily. Also one bird in Oddkelsver on 19th August.

Red-necked Phalarope, *Phalaropus lobatus*

Abundant. By 17th August, when we arrived in Pjorsarver, migration had apparently started. Several individuals and a large flock of at least 50 birds seen in Oddkelsver on 19th August.

In all meadows outside Pjorsarver, sometimes in groups of five-10 birds. In Asgard, one bird seen upending deliberately to pick crustaceans (*Lepidurus arcticus*) off the bottom of a small pool. This upending activity was not seen in any other individual.

Arctic Skua, *Stercorarius parasiticus*

Common, particularly in Pjorsarver, where it was estimated 22 birds were resident in Illaver and Oddkelsver alone (eight pale phase, one intermediate and 13 dark). A group of one dark and two light phase Arctic Skuas was commonly around Nautalda. They were frequently seen mobbing Great Black-backed Gulls, and once a Raven; none of the victims was carrying food.

On 21st August a dark and light phase skua were seen to catch and devour a Wheatear.

In the Kerlingarfjoll and Hveravellir districts the intermediate phase was predominant, while a light phase skua was seen only once. In Gudlaugstungur two 'intermediates' were seen chasing a Meadow Pipit for several minutes, finally giving up the chase. No skuas were seen in the north of Iceland, indicating surely that they are strongly associated with breeding Pink-footed Geese. There was no evidence in the Pjorsarver of their actually killing the geese or goslings, although there were several corpses found which had presumably been killed by another predator and yet had evidence of scavenging by skuas, such as the removal of eyes and breast meat. The immediate presence of skuas was never seen to cause any disturbance among the geese.

Great Black-backed Gull, *Larus marinus*

Only recorded in Pjorsarver where it was estimated there were 19 individuals in the Oddkelsver and Illaver meadows. These birds must seasonally depend entirely on the goose population for food, migrating to the coastal farming areas during the winter. One was seen killing a gosling which it had separated from the adult geese. In contrast to the Iceland Falcon the gull was easily frightened away and quickly lost apparent interest in its prey.

Arctic Tern, *Sterna macrura*

Seen only twice in Pjorsarver (Illaver; 20th, 21st August) and twice in Gudlaugstungur (12th 13th August). On each occasion observed from a great distance in flocks of ten to 20 birds.

Meadow Pipit, *Anthus pratensis*

Very common in and outside Pjorsarver, becoming gregarious towards the end of August and seen in flocks of 30–40 birds at Nauthagi by 22nd August.

White Wagtail, *Motacilla alba*

Common at Nauthagi, but infrequent elsewhere in the Pjorsarver. This may be due to the hot springs there which probably breed a luscious crop of insect life. Outside the Pjorsarver they seemed to have a definite association with hot springs; they were common at Hveravellir but otherwise scarce. The numbers at Hveravellir increased during our visit there (9th–15th August) though little movement was noticeable; two weeks later only two individuals were seen in four days.

Wheatear, *Oenanthe oenanthe*

Seen with increasing frequency, indicating presumably that a few Wheatears breed in these areas and that many were congregating from breeding grounds elsewhere. There was a daily increase in numbers at Hveravellir Hot Springs, over the week 9th–15th August from one bird on 9th to many on 15th August. A very active flock of 20–30 birds was seen every day on Nautalda. Wheatears were seen to be preyed on by Merlins and Arctic Skuas.

Redwing, *Turdus iliacus*

One dead bird found by Olafsfell on 23rd August.

Snow Bunting, *Plectrophenax nivalis*

Frequently seen. Flocks of over 20 birds most days at Nautalda and a similar flock at Oddkelsalda on 19th August. Earlier they were more often in small groups of ten-15 birds, and occasionally as individuals.

Raven, *Corvus corax*

Only one pair observed which was resident at Nautalda. The scarcity of this species was surprising since an abundance of fresh gosling corpses provides an ample food supply.

Ravens were frequently seen outside Pjorsarver. A pair was resident near Fossrofuloekur and six were seen at one time at Hveravellir on 1st September. Much less common, however, than in the farming areas nearer the coast where they are abundant.

On nominate *Lybius leucomelas* (Boddaert)

by P. A. Clancey

Received 20th December, 1967

Since Winterbottom (1958) reviewed the races of the Pied Barbet *Lybius leucomelas* (Boddaert), *sens. strict.*, of southern Africa, his conclusions have given rise to numerous communications in the periodic literature. Notes and papers on subspeciation in this barbet published since the stated revision in 1958 are Clancey (1959, 1963, 1967), Irwin and Benson (1967), Traylor (1965), and Winterbottom (1962).

In my recent Catalogue of Birds of the South African Sub-Region (1965) I admit five races of this barbet as against the three recognised by Winterbottom. A new study of the racial variation in *L. leucomelas* recently undertaken at the Durban Museum confirms the races and their ranges as laid down in my Catalogue and has thrown further light on the disposition of the southern populations with the medio-ventral plane speckled with black, with which I associate the name *L. l. leucomelas* (Boddaert), 1783: Cape of Good Hope, Cape Province, but to which Winterbottom attaches *L. l. namaqua* (Sclater), 1922: Klipfontein, north-western Cape Province.

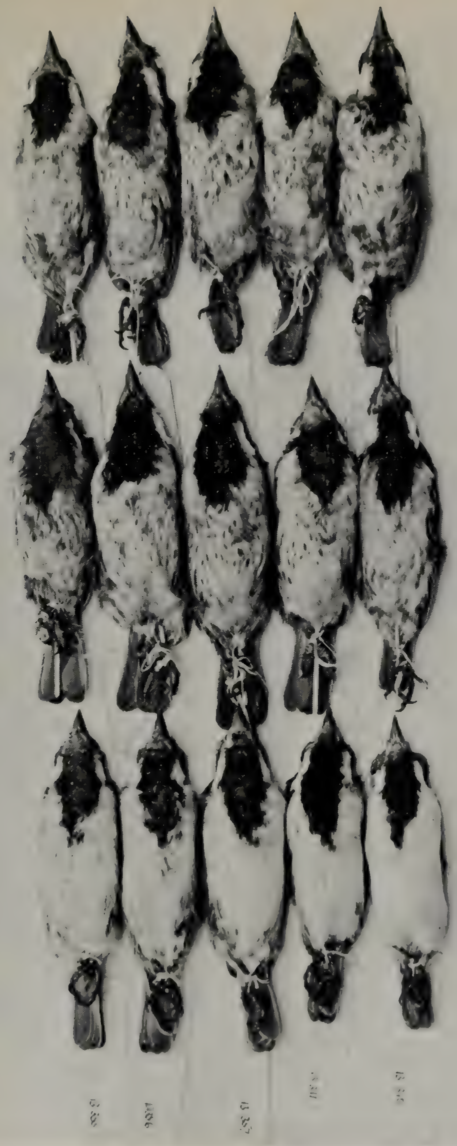
In his efforts to preserve *namaqua* as discrete from nominate *leucomelas*, Winterbottom moved the type-locality of the latter from the present day Cape of Good Hope east to Beaufort West, in the Karoo of the Cape. This action was taken with the aim of allocating nominate *leucomelas* to birds with whitish and unspotted or largely unspotted median underparts, on the grounds that no reference was made to such spotting in the description of the species in Latham, *Gen. Syn. Birds*, vol, i, 2, 1782, p. 502, upon which Boddaert's *Bucco leucomelas* was founded. As the entire nomenclatural edifice of *L. leucomelas* rests on the correct determination of the populations to which *B. leucomelas* was first applied, particular attention was paid to this issue during my recent research into this species and its variation.

I find that some Pied Barbets collected from within the range of the spotted "*namaqua*" of Winterbottom during the months of February–April, when newly moulted, give an initial impression of being unspotted, unless the feathers are raised by the thumb and forefinger, when the speckling and shaft-streaking will be found in such specimens to be sub-apical in distribution. Wear and feather desiccation result in such birds assuming a spotted facies similar to better marked examples as the plumage ages and weathers. Bearing in mind the scientific standards obtaining in the late eighteenth century, a freshly moulted and lightly marked example of "*namaqua*" could be described and illustrated as having white underparts.

The second point to be considered is the vexed question of the type-locality of nominate *L. leucomelas*. In 1783 the term "Cape of Good Hope" was given to an ill-defined region of southern Africa, falling largely within the limits of the present Cape Province to the south of the Orange R. Writing in 1957, Macdonald discussed the western geographical variation in the Pied Barbet and restricted the type-locality of nominate *L. leucomelas* to the Cape Flats, in the vicinity of Cape Town, in the south-western Cape. Winterbottom, without mentioning Macdonald's action, "amended" the type-locality to Beaufort West, in the Karoo of the Cape. As Macdonald had already, in 1957, proposed a restricted type-locality (Cape Flats) on the basis of similar reasoning to that employed by Winterbottom one year later, the action of the latter worker was unnecessary. As grounds for accepting Beaufort West are no more cogent than those for adopting a restriction of the type-locality to the Cape Flats, I believe we should accept the first, Macdonald's, proposal. However, the issue is purely academic, as it is evident that the three type-localities: Cape of Good Hope, Cape Flats and Beaufort West, now available for *L. l. leucomelas*, all fall within the range of populations in which the medio-ventral plane is variably marked with drop-shaped spots and/or shaft-streaks of black, which are subspecifically inseparable from like populations resident in northern Little Namaqualand (topotypical of *L. l. namaqua*).

In the adequate panel of material now before me, I find that birds with black spotting and streaking to the middle of the lower breast range from about the Richtersveld and the lower Orange R., south to the Cape of Good Hope, and Cape Agulhas thence eastwards south of 31° S. lat. to the valley of the Great Fish R., in the eastern Cape. A single specimen from Beaufort West examined shows spotting and streaking to the mid-breast, and numerous other *namaqua*-like specimens are present from well north and east of this locality, as shown on the accompanying map. In the material assembled, particularly good samples are available from two south-eastern and eastern localities, namely Kleinpoort at 33° 20′ S., 24° 53′ E., and Tarkastad at 32° 01′ S., 26° 16′ E. From Kleinpoort a sample of seven ♂ ♀ has been available, six specimens of which are as palpably spotted over the mid-breast as the most strongly marked of the numerous topotypes of *namaqua* from Springbok, in Little Namaqualand, the seventh showing cryptic, sub-apical spotting. Nine ♂ ♀ are available from Tarkastad; seven of these are immediately seen to have the mid-breast spotted, while the other two show a like but sub-apically distributed development.

The following are localities from which *namaqua*-like birds were examined:—



Upper row: From left to right Nos. 1-3 specimens from Springbok, Little Namaqualand (topotypical of *L. l. namaqua*), 4 specimen from De Bosch, Calvinia, 5 specimen from Still Bay, south-western Cape.

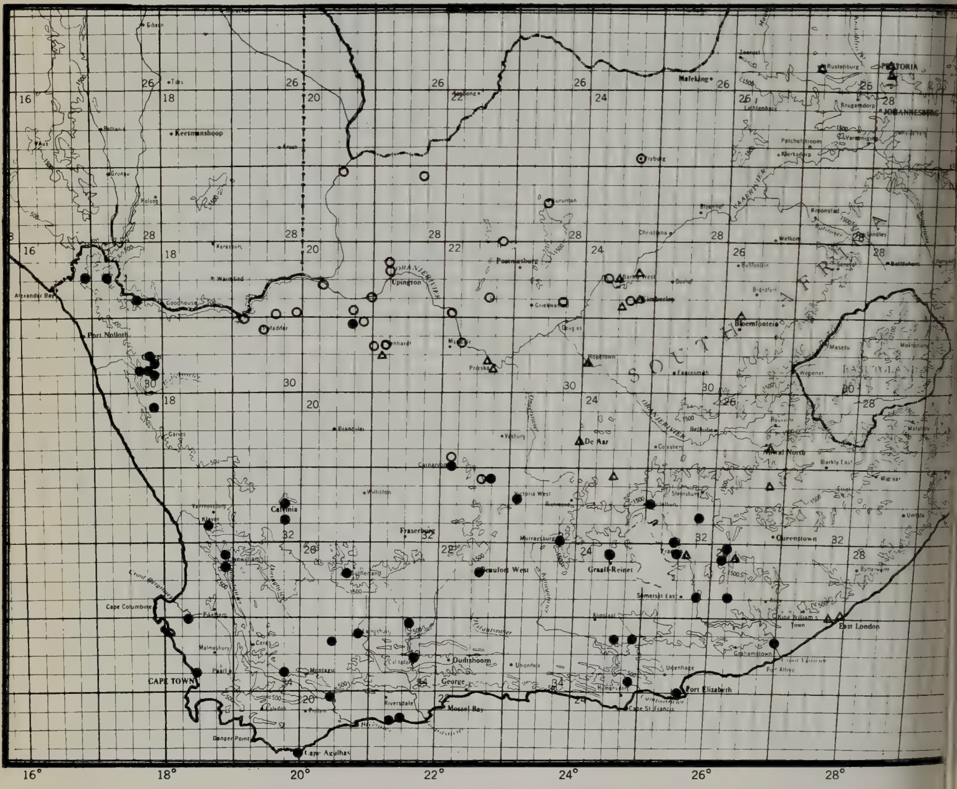
Middle row: 1 specimen from Adelaide, 2-3 specimens from Kleinpoort, 4 specimen from Adelaide, 5 specimen from Hofmeyr, eastern Cape.

Bottom row: 1-3 specimens from Glen, Bloemfontein, Orange Free State, 4-5 specimens from Kuruman, northern Cape.

Specimens in the upper and middle rows with speckling and streaking to the mid-breast represent *L. l. leucomelas* (with *L. l namaqua* a straight synonym). In the bottom row, specimens 1-3 with streaked flanks represent *L. l. centralis* (note plain white mid-breast), while specimens 4 and 5 with unstreaked flanks are *L. l. nkatiensis*.

North-western Cape: Noisabis, Annisfontein, Viool's Drift, Kuboos, Springbok, Kamieskroon; *south-western Cape:* Calvinia, Klaver, Clanwilliam, Kersefontein (Berg R.)*, Melkbos Strand, Cape Agulhas, Still Bay, Robertson, Matjiesfontein*, Welbedacht*, Swellendam; *southern Cape:* Dwyka*, Calitzdorp, Laingsburg; *central Cape:* Victoria West, Carnarvon*, Sutherland, Beaufort West, Murraysburg; *eastern Cape:* Kleinpoort, Pearston*, Graaff-Reinet, Somerset East-Bedford, Cradock*, Tarkastad, Adelaide, Hofmeyr*, Committees Drift*.

(*N.B.* Localities asterisked have yielded samples in which the medioventral speckling in one or more specimens is sub-apical in distribution, and is only revealed by raising the feathers. In material from the localities


16°
18°
20°
22°
24°
26°
28°
Keetmanshoop
Upington
Port Nolloth
Alexander Bay
Calvinia
Carnarvon
Victoria West
Beaufort West
Graaff-Reinet
Fraserburg
Murraysburg
De Aar
Kimberley
Bloemfontein
Mafeking
PRETORIA
JOHANNESBURG
Queenstown
East London
Port Elizabeth
Oudtshoorn
George
Mossel Bay
CAPE TOWN
Cape Columbine
Danger Point
Cape Agulhas
ORANJERIVIER
SOUTH AFRICA
BASUTOLAND

The Cape Province, South Africa, and immediately adjacent territories
Map showing the loci of specimens of Pied Barbets identified down to subspecies in the Cape Province and certain peripheral territories.

- ● Specimens palpably or cryptically speckled over the mid-breast=*L. l. leucomelas* (Boddaert)
- △ Specimens with mid-breast plain white, and flank streaking reduced=*L. l. centralis* (Roberts)
- ○ Specimens with mid-breast plain white, and flank streaking vestigal or absent=*L. l. nkatiensis* (Roberts)

not asterisked the speckling in all specimens is evident without raising the feathers).

From the above it will be appreciated that the name *namaqua* (1922) and *leucomelas* (1783) apply to one and the same racial group of populations, and must be treated as synonymous.

In so far as the Cape Province is concerned two other groups of populations require to be considered. Both occur to the north of the range of *L. l. leucomelas* and are whiter below, lacking the mid-breast speckling and shaft-streaking. In both groups the black flank streaking is reduced, and in one is almost non-existent. Also associated with these trends of variation is a demonstrable decrease in size and an increase in the amount of lemon yellow sagittate speckling to the upperparts and yellowness of the rump. A distinction between these two whitish ventralled groups of populations is sometimes tenuous along the southern periphery of their ranges owing to the intergradation between them and with the nominate race. However, on the basis of the variation pattern in the species as a whole, it is considered desirable to admit them as two races, one in which the white of the underside is more creamy and the flanks virtually unstreaked (*L. l. nkatiensis* [Roberts], 1932: N'kate, Botswana), and the other with the flanks moderately streaked and the ventral white colder in tone (*L. l. centralis* [Roberts], 1932: Rustenburg, Transvaal). The former also ranges still smaller in size and is more copiously marked above with lemon yellow spotting, the wings of 10 ♂♂ 80-84 (82·5), 10 ♀♀ 78-83 (80·5). In 10 ♂♂ of *L. l. leucomelas* the wings measure 83·5-89 (85·4), 10♀♀ 81-85 (82·8). In *centralis* the wing-length is intermediate: wings of 10 ♂♂ 81-85 (83.0) mm. *L. l. nkatiensis* also shows a reduction in the mass of the bill and the degree of the lateral notching.

The Cape ranges of both *nkatiensis* and *centralis* can be assessed from the data provided on the accompanying map. *L. l. nkatiensis* extends north of Cape limits through South-West Africa to Angola, south-western Zambia, western Matabeleland, Rhodesia, and the dry west of the Transvaal. *L. l. centralis* ranges from the north-eastern Cape and southern Griqualand West to the Orange Free State and the southern Transvaal highveld. The other two races admitted by me in my Catalogue are eastern in disposition: *L. l. affinis* (Shelley), 1879: Weenen, Natal, and *L. l. zuluensis* (Roberts), 1931: Mkuzi R., north-eastern Zululand. Both of these have the underside suffused with pale lemon or saffron yellow in freshly moulted dress. *L. l. affinis* has the flanks streaked as in *centralis*, with which it agrees in size; *zuluensis* has the flanks unstreaked (like *nkatiensis*) and is smaller than *affinis* (wings in ♂♂ 80 mm. and below).

ACKNOWLEDGMENTS

Just over 250 specimens were assembled for this research. To augment the Durban Museum series of 120 specimens, Cape and other relevant material was borrowed from the following museums: South African Museum, Cape Town (31), East London Museum (76), the Transvaal Museum (20), and the National Museum of Rhodesia, Bulawayo (6). To the Directors and responsible officials of these institutions I tender my best thanks.

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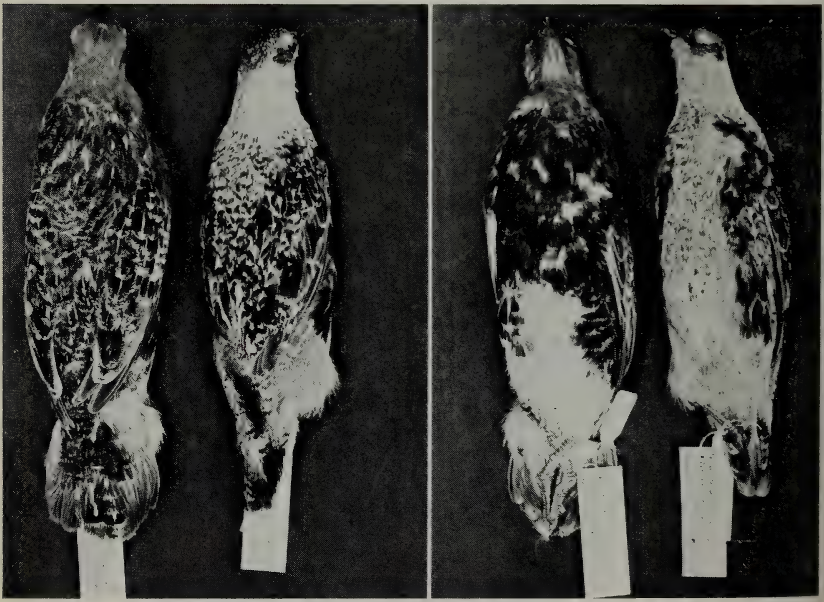
On the "*montana*" variety of the Common Partridge

by JAMES HARRISON

Received 2nd January, 1968

In his account of some mutations occurring in the genera *Alectoris* and *Perdix*, Ash (1966) discussed their genetical implications and stressed the fact that such anomalies of plumage could have phylogenetic significance. He also suggested that these mutations may provide evidence of reversal to a primitive type in accordance with my own findings on some recurring varieties in the Anatidae (Harrison 1953). The principle postulated that such mutations are usually the result of the recombination of recessive genes and that these may lie dormant for a very long time in the gene pool



Figs. I and II.
The Mountain or Cheshire Partridge, *Perdix perdix perdix* var "*montana*", on left, adult female, on right, juvenile male.

of a species before a mating favouring the establishment of a dominant recessive character occurs. That there is this hereditary factor in most cases of a recurring mutation is evident from its occurrence in certain restricted localities. This aspect of the problem is also emphasised in Ash's paper (*loc. cit.*) Furthermore, by the very nature of a recessive, it would be difficult to be sure that a mutation was really eliminated from any particular locality in which it had once occurred. This is particularly so in the case of the Grey Partridge *Perdix perdix*, which is less given to moving away from any district in which it is, than, for example is the Red-legged Partridge *Alectoris rufa*.

Some references additional to those given by Ash (*loc. cit.*) may not be without interest insofar as *Perdix p.* "*montana*" is concerned.

One of these is a publication by Ogilvie-Grant (1895) especially as this contains a colour plate of this striking variety and depicts the extreme rufous phase of the mutation. This same plate is reproduced by Hachisuka (1928) and it is worth quoting his comments in this connection . . . "one of the best known examples is the Mountain Partridge, (*Perdix montana*) which appears sporadically in the breeding places of the Grey Partridge, *Perdix perdix*, in England. We do not know how this character is acquired, or whether it can be transmitted to the next generation." However, he later refers to "juvenile stages" amongst specimens in the British Museum. Latham (1823) referred to the variety as the "Cheshire Partridge", and specimens were shown in 1915 by Ogilvie-Grant and Rothschild at the meeting of the British Ornithologists' Club on 15th January of that year.

The present communication concerns two specimens, one of which was shot at Kennardington in Kent by Mr. Hugh Ticehurst, on 10th September, 1945; this is a juvenile male. The other was shot by Mr. E. D. Cutting on the East Guldeford marshes on the Kent/Sussex border, at the end of January, 1967. The two localities are comparatively close to each other; this latter bird is an adult female. As can be seen from the accompanying photographs, the birds are of the same type and are in effect an admixture of the rufous phase with an excess of melanin. This similarity is what one would expect as the localities are so close to one another, for the occurrence of the mutation would, of course, be favoured by this proximity.

The examination of these two specimens brought to light certain characters which made it desirable to examine the series of this variation in the collections at the British Museum (Natural History). This series is represented by 15 specimens—three adult males, three adult and one juvenile female and four unsexed birds. The general colour shown by the birds ranges from a very dark rich maroon to a rather pale rufous individual.

The character which presented itself as one of special interest in the two recent specimens referred to above, was the anomalous condition of the median wing-coverts. These had undergone some modification from the accepted pattern peculiar to, and distinguishing the two sexes of the species.

Ogilvie-Grant (1895 Fig. 1.) shows the characters upon which the sexual dimorphism is based in *Perdix perdix*. The modification observed in the two recent specimens constitutes therefore a disturbance of secondary sexual characters, and anomalies of sexual dimorphism occur in many different species of birds.

The Kennardington bird was prepared and sexed by the late Mr. George

Bristow, a professional taxidermist, who in my experience was careful and reliable in the sexing of specimens, and who could be depended upon not to enter a definite sex upon the data label in cases where there was any doubt. The East Guldeford specimen was prepared and sexed by myself, and presented the anatomical characters of a normal female. The size of the ovary is indicated on the small tag label which is attached for such purpose at the time of skinning, and was in the quiescent stage.

The median wing-coverts of the former bird show a fairly thin mesial shaft-stripe but depart from the accepted female pattern by having a light tip to the feather. The latter has a rather thicker mesial shaft-stripe with a fairly pronounced light tip to the feather, but it lacks the light transverse barring which characterises the female type of median wing-covet. These differences can be seen in the plate. (Fig. 1.).

Let us now consider the anomalous characters which the British Museum series show:—

Out of these 15 specimens there are only four which present normal sexual dimorphism insofar as the median wing-coverts are concerned. This high proportion of abnormal birds is surprising, and shows, I think a certain instability of the genetic constitution which appears to have resulted from the incidence of the colour aberration, although as we have already seen, anomalies can occur in normally plumaged individuals. In Ogilvie-Grant's anomalous specimen (*vide supra*) of normal plumage otherwise, the gynandromorphism is expressed in one and the same feather.

In the British Museum series there are no fewer than two bilateral gynandromorphic individuals. In one of these this condition exists on the two different sides of the bird; its origin was from the Rothschild collection (B.M. No. 1939: 12: 9: 3565). The only datum is that it was obtained in Norfolk—the right wing-coverts are female in character and the left male. The second individual is of continental origin with scanty data, and the gynadromorphism presents itself as an admixture of male and female wing-coverts on both sides, the specimen being one of the unsexed group. One can summarise the variations seen in this series briefly as follows:—

♂♂ 7
- (a) No anomalies (three)
- (b) Normal medial shaft-stripe with very small pale spot at tip (three-two of which are the subjects of gynandromorphism)
- (c) Greatly attenuated to almost complete suppression of medial shaft-stripe the presence of which is indicative of the male of the species in normal individuals (seven)

♀♀ 3
- (a) No anomalies (one)
- (b) Feathers with pale terminal tips varying in extent but sometimes large and vermiculated dusky (one)
- (c) General absence of pale transverse barring which is the pattern of the normal female (one)

oo 4
- (a) Predominantly ♀ type, but lacking the pale transverse barring (three)
- (b) Gynadromorphism (one)

Out of the series of 15 birds only three ♂♂ and one ♀ show no anomalies.

It is perhaps worth stressing here that in all specimens collected for study, where it is possible, a sketch of the gonads should be made; this is of the utmost value.

At Dr. Ash's suggestion I have picked out at random 17 specimens from my own collection from various European countries, including seven from the British Isles, two of the nominate race, and six of the form *P. p. sphagnetorum* from Holland, one from Czecholsovakia and two from Switzerland. While, of course, this sample cannot be regarded as statistically significant, its comparison with the series of mutants is nevertheless of interest, and it was all prepared by experienced workers.

Those from the British Isles were, for the most part, prepared and sexed by myself; one, however, was done by Mr. A. H. Bishop, who was for many years taxidermist to the British Museum, Natural History.

The Swiss and Czechoslovakian specimens were prepared and sexed by the late Ernst Flükiger, while the Dutch examples were investigated by Mr. P. A. Hens and myself.

As selected there was only one in which the sex was in doubt, which was noted as a ? ♀; Flükiger was of course a very experienced professional taxidermist who was meticulous in observing the conventions of the sexing of specimens, and it is of interest to note that the median wing-coverts of this individual broadly conform to those of the female. In this series the following results can be set out:— of the seventeen specimens nine are immature birds, either full juveniles or birds in their first year. Of these, three are ♂♂ and six ♀♀. Of the eight adults, five are ♂♂ two are ♀♀ and one a ? ♀. Note that juveniles cannot be sexed by this character (median wing-coverts) so these should be deleted unless moult into first winter plumage has started (in which median coverts are replaced at an early stage—all except very late birds by early September). This may account for the two gynandromorph males (b), for the juvenile coverts are rather like those of a female.

♂♂ 8
(a) No anomalies (six)
(b) Gynandromorphism (two), shown in one by an admixture of barred and unbarred feathers, and in the other by some transverse barring on both sides.

♀♀ 8
(a) No anomalies (seven)
(b) Median wing-coverts superficially resembling female type but with only very slight transverse barring (one).

?♀ 1
(a) Gynandromorphic, median wing-coverts on the left side of female type, and those on the right of male type.

From this it is clear, as pointed out by Ash (*in litt.* 27. vi. 67), that the type of the wing-coverts cannot be entirely relied upon to determine the sex in this species. Comparing the two series, however, birds of normal phenotype only show anomalies in three individuals, while in the ‘‘*montana*’’ series the number of the anomalous examples was, as we have seen, as high as eleven. It would seem therefore that this particular mutation at any rate amongst the colour aberrations in *Perdix perdix* has a very disturbing effect upon an average character in the sexual dimorphism of the species.

It would also seem possible that the character concerned is very labile, and this view is supported by the fact that, in birds of normal colour, the character shows a degree of variability and indeed of instability. The Partridge is, in fact, a bird of variables, for even the striking chestnut horse-shoe marking on the breast, which of course by itself has no significance as a character in sex differentiation, can be completely absent.

An assessment of the various normal characters and their incidences in this species in both sexes would be of much value and interest.

DISCUSSION

Varieties in birds have always been regarded as curious rather than significant, and as a result of this their potential value to science has been stultified. This view is regrettable, and little endeavour has been made to seek any explanatory basis as to their meaning or purpose in the phenomena observed. Usually such cases are disposed of as due to ‘‘parallel development’’, whereas many instances could be due to genetical mechanisms such as are known to account for, for example, albinism and other colour varieties. The true albino which constitutes a pathological state is known to be due to a dominant recessive.

In this connection it is perhaps useful to consider the cases of certain species which exhibit a normal dimorphic morphology. Instances of this phenomenom are provided by the red and the grey phases of the Tawny Owl *Strix aluco* and other owls, the dark and light phases of the Arctic Skua *Stercorarius parasiticus*, the dark and normal phases of Montagu’s Harrier *Circus pygargus*, and of course the striking melanistic form of the eastern Black-headed Shrike, *Lanius schach*, and many more instances could be mentioned.

It could well be that such cases, in which a melanistic phase is a normality, represent a persistence of a condition which may have been very much more common at some earlier stage in the evolution of the species, but which over the aeons of time has been selected against and which now occurs only as a comparatively rare genetic recombination.

It seems reasonable to ask—did *Perdix perdix* during the course of its evolution possibly have a rufous and a melanistic form?

Needless to say were it possible to carry out breeding experiments on this variety, both by pairing the mutations *inter se*, and by crossing the variety with normally plumaged individuals, the nature of the mutation could be determined. That the variety is fertile is obvious since immature birds have been obtained as specimens, though the fertility rate could well show some changes.

The writer has no doubt whatsoever that this mutation will recur again and again in the favoured localities, for once the genes have occurred in the species group they will continue to be carried, if only to be exposed by recombination sporadically and possibly also at very infrequent intervals.

ACKNOWLEDGMENTS

My first indebtedness is to Mr. E. D. Cutting who sent me the 1967 specimen. The Kennardington specimen came to me through the kindness of Dr. N. F. Ticehurst, while for the series of Dutch specimens I am indebted to Mr. P. A. Hens. I am also grateful to Dr. Jeffery Harrison with whom I have discussed the implications of the cases, and who read through the M.S. Dr. J. S. Ash has also been kind enough to read the typescript and proffer valuable suggestions and comments. Mr. F. C. Sawyer was good enough to establish a reference for me. I am most grateful to Dr. Pamela Harrison for the photographs of the specimens, and to Mr. J. D. Macdonald, of the British Musuem (Natural History), for making the series of this mutation available to me for study.

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On the nominate race of *Pogonocichla stellata* (Vieillot)

by P. A. Clancey

Received 20th December, 1967

The nominate race of the Starred Robin *Pogonocichla stellata* (Vieillot), 1818: Plettenberg Bay, southern Cape Province, of southern and eastern Africa, is currently believed to extend from the southern Cape Province north-east to southern Zululand. North of this, in southern Africa, it is replaced by *P. s. lebombo* Roberts, 1935: Ingwavuma, Lebombo Mts., north-eastern Zululand, and *P. s. transvaalensis* (Roberts), 1912: Woodbush Forest, Tzaneen, northern Transvaal. Moreau (1951) recognises only nominate *stellata* and *transvaalensis* in zoogeographical South Africa, placing both *lebombo* and *P. s. chirindensis* (Roberts), 1914: Chirinda Forest, Mt. Selinda, Melsetter district, Rhodesia, as synonyms of the latter. Recently, Ripley (1964), Clancey (1966), and Clancey and Lawson (1967) have reinstated *lebombo* as discrete from *transvaalensis.* As shown by the last named authors, the back is green in *lebombo* as against bronze in *transvaalensis.*

In the southern African populations of this temperate forest element, variation affects the blue-grey of the head, the colour of the mantle, scapulars and rump, the intensity of the yellow of the underside and of the pale areas of the rectrices. Also, in some populations, the outer vanes of the bastard-wing and adjacent greater-coverts are edged with silvery white rather than bluish-grey. A careful study of a panel of 75 specimens of the populations occurring in evergreen forest from about Knysna, in the southern Cape Province, north-east to Qudeni and Nkandhla, in southern Zululand, shows that the present nominate race of this robin must be split into two subspecies on the basis of well-defined colour differences in the adult stage. In place of the present *P. s. stellata* as laid down in my Catalogue (Clancey [1966]) the following revised arrangement of the populations is now proposed:

(a) **Pogonocichla stellata stellata** (Vieillot).

Muscicapa stellata Vieillot, *Nouv. Dict. d'Hist. Nat.*, vol. xxi, 1818, p. 468: Plettenberg Bay, southern Cape Province.

Adult with head Slate Color (pl. liii [Ridgway, 1912]); rest of upperside Warbler Green/Dark Citrine (pl. iv). Underside Lemon Chrome (pl. iv) with lateral wash of Light Cadmium. Tail with pale areas Buff-Yellow (pl. iv).

Range: Southern Cape Province from about Knysna, east to the interior temperate forests of the Transkei, in eastern Cape. Some birds are subject to movement to the north-east of this in winter, as it has been taken in the Ingeli Forest, Alfred County, Natal, at 5,000 ft. a.s.l. in early October (Durban Museum).

(b) **Pogonocichla stellata margaritata** Sundevall, new race.

Pogonocichla margaritata Sundevall, *Oefv. K. Sv. Vet.-Akad. Förhandl.*, vol. vii, 1850, p. 104: "Caffraria inferiore s. propria" the *Type* from upper Umgeni R., Natal (*vide* Gyldenstolpe, *Ibis*, 1934, p. 291 [see below]).

Adult darker over head than last (Blackish Slate [pl. liii]); rest of upperside bronze rather than green (about Orange-Citrine [pl. iv]). On underparts orange as against Lemon Chrome (Cadmium Yellow [pl. iii]), and pale surfaces in rectrices more orange, less yellow (Light Orange-Yellow [pl. iii]). Similar in size.

Range: Coastal Pondoland and high level forests of East Griqualand to Natal and southern Zululand, reaching as far as the forests at Qudeni and Nkandhla. Some winter along the Natal and Zululand coast (mainly birds in prebasic dress).

Note: In *Ark. Zool.*, vol. 19A, 1926 p. 54, Gyldenstolpe gives the type-locality of *P. margaritata* as Pietermaritzburg, Natal. The reason for the correction eight years later to upper Umgeni R., the one adopted here, is not evident on the basis of the information given in either citation.

P. s. lebombo, with the head and ventral coloration of *P. s. margaritata* but with a greener dorsal surface and silvery white outer vanes to the bastard-wing and adjacent greater-coverts, is known from the Lebombo Mountains and coastal Moçambique from Lourenço Marques to the Limpopo R. mouth. *P. s. transvaalensis*, which is like *lebombo* but with the back bronze and not green, is a montane form which ranges in a chain of isolates from the Ngome Forest of north-western Zululand, through western Swaziland and the Transvaal to eastern Rhodesia in the highlands, and adjacent Moçambique.

ACKNOWLEDGMENTS

For the loan of additional material I am grateful to the Directors of the East London and Natal Museums.

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A frigate-bird off Yorkshire

by A. Paterson

Received 13th February, 1968

At about noon on 15th October, 1966, I was watching seabirds at Filey Brigg on the north-east coast of England when I saw a bird larger than a Gannet, *Sula bassana* (of which some were present), and of a totally different shape and coloration, appearing at first to be entirely black and white, flying south into a strong southerly wind. From the time when I first saw it until it passed out of range I was able to watch through either a 20 X telescope or 7 x 50 binoculars for at least four minutes at distances down to 500 yards in a good light. The following field description is compiled from notes that I made at the time:—

The general shape was long and streamlined, with a forked tail that could be seen when the bird banked. The wing-span was large, somewhere in the range of 7½ feet, and the wings were long and backswept, appearing thicker around the carpal joint. All the upperparts were brown or black, and the chin was a pale grey, which extended down onto the throat. The breast and upper belly were white, and all the remaining underparts were dark brown or black. The bill was long and slightly curved with a noticeable hook, and a distinct coral pink in colour. The legs appeared a dark maroon. The flight was absolutely effortless into the wind, and I did not see a single flap.

At the time I thought that the bird must be a female Magnificent Frigate-bird *Fregata magnificens*, and I submitted a description and drawing of it claiming a record of that species to the 'British Birds' Rarities Committee, who rejected it without making any other suggestion as to what it might be. I am indebted to Dr. W. R. P. Bourne for assistance in further attempts to identify it, in which I have also been assisted by Mr. Eugene Eisenmann, M. Christian Jouanin and Dr. Bryan Nelson, who also agree that whatever its precise identity, it appears to have been some kind of frigate-bird *Fregata* sp. and I have been able to confirm this point since moving to the Bahamas, where I have seen many Magnificent Frigate-birds.

However, while clearly a frigate-bird, it does not appear to have been *Fregata magnificens*, the normal species of the North Atlantic, in which the bill and throat are normally dark, and while I have now seen a number of females of that species, none have had the bill other than bluish-horn. The species in which the females are most widely known to have red bills appear to be the Lesser Frigate-bird *Fregata ariel*, with a wide distribution in tropical seas other than the North Atlantic, and the Christmas Frigate-bird *Fregata andrewsi* of the East Indies, but both of these normally have dark chins, which is confirmed by Roger Pocklington (in a letter to Dr. Bourne) from experience of a large number at Christmas Island. In the remaining species, the Great Frigate-bird *Fregata minor*, the female does have a grey chin, although at Pacific breeding sites as far apart as Laysan, the Galapagos and the Tuamotus, according to Mr. Eisenmann, Dr. Nelson and M. Jouanin, the bill is dark. However, Mr. Eisenmann has pointed out that some specimens of female *F. minor* from South Trinidade in the South Atlantic belonging to the race *nicolli* have pinkish bills in skins, and Dr. Bourne has shown me a bird like this from the British Museum collection of a series of all species in the genus which agrees most closely with the one I saw as does a photograph of a live female *F. minor* taken by Mr. P. J. Gould on Laysan in all features except the dark bill. The most likely interpretation appears to be that the bird I saw in Yorkshire was a female Great Frigate-bird of the South Atlantic race *F. minor nicolli.*

It has been suggested that frigate-birds are sedentary species and do not venture far from land, 200 miles being a figure that is often quoted. However, in their recent analysis of central Pacific ringing recoveries of the Lesser Frigate-bird, F. C. Sibley and R. B. Clapp (*Ibis* 109: 328-337) state that "during . . . pelagic surveys over 40 Great Frigate-birds were seen more than 200 miles from land and no less than nine Great Frigate-birds at distances of 500 miles or more", and go on to list recoveries of Lesser Frigate-birds thousands of miles away from the breeding places, including one in Siberia. The Great Frigate-bird has not been recorded in the North Atlantic before, but the Lesser Frigate-bird, with a similar range in the South Atlantic, was photographed in Maine, New England, in July 1960, (D. Snyder, *Auk* 78: 265), so it seems not impossible that a female Great Frigate-bird might also wander to England.

An instance of apparent sympatry between the Great and Spotted Bowerbirds

by SHANE PARKER

Received 8th December, 1967

The Great Bowerbird, *Chlamydera nuchalis*, and the Spotted Bowerbird, *C. maculata*, appear to be geographical representatives; no mention of range overlap is to be found in Marshall (1954: 72-99).

At Glendower, a property on the Flinders River, near Hughenden, central Queensland, during March and early April 1964, the Spotted Bowerbird was moderately common in the riverine forest bordering the then dry Flinders, and to a lesser extent in the semi-arid woodland further back from the river. Sometimes the species was seen singly, sometimes in groups of up to six. On 4th April I approached to within 10 feet of a Great Bowerbird as it sat drinking at a cattle trough supplied by a nearby bore. The identity of the bird was unmistakable; I had already seen it in large numbers a month before at Charters Towers. This appears to be the first recorded case of any form of sympatry between these two species.

Reference:

Marshall, A. J., 1954. *Bowerbirds*. Oxford.

CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

Proofs must be returned without delay. No changes may be made at this stage, other than corrections. At the discretion of the Editor, the Club will pay for a reasonable number of monochrome blocks, which the contributor may retain for his own use.

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DINNERS AND MEETINGS FOR 1968

19th March, 16th April, 21st May (provisional).

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Edited by
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BULLETIN

OF THE

BRITISH ORNITHOLOGISTS' CLUB

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The six hundred and fiftieth meeting of the Club was held at the Rembrandt Hotel, London, on the 19th March 1968.

Chairman: Dr. J. F. Monk.

Members present: 12; Guests, 2.

Mr. J. H. Elgood spoke on some birds of Nigeria, illustrating his talk with coloured slides and an exhibition of skins including *Malimbus ibadanensis* which he discovered at Ibadan, described and named in *Ibis* during 1958. Recordings of bird calls and songs made at Ibadan were played.

The type-locality of White-quilled Rock Pigeon, *Petrophassa albipennis* Gould

by SHANE PARKER

Received 8th December, 1967

The White-quilled Rock Pigeon was described by J. Gould (Gould, 1841: 173-4) from a male and female obtained from the "most rugged and sterile districts of the north-west coast of Australia" by officers of H.M.S. *Beagle* (Gould, 1843: pl. 71), and now in the Academy of Natural Sciences, Philadelphia (de Schauensee, 1957: 164). Mathews (1912: 28) restricted the type-locality to Wyndham, and described a new race, *P. a. alisteri*, from Napier Broome Bay, but Whittell (1954: 101) showed that the types of *albipennis* actually came from the vicinity of King Sound.

The precise type-locality may be ascertained from an account of the Australian voyages of the *Beagle* by her commander, John Lort Stokes (Stokes, 1846: 109-11:) "Feb 10 (1838) . . . We found a temporary anchorage the same morning, on the east side of the large group forming the eastern (?*sic*) side of Sunday Strait . . . This group we called after Lieutenant Roe, R.N. . . . Nothing could exceed the desolate appearance of the land near which we were now lying: rocks, of a primitive character, massed together in all the variety of an irregularity . . . rose, drear and desolate, above the surrounding waters; no trees, shaded their riven sides, but the water-loving mangrove clothed the base of this sterile island, and a coarse, wiry grass was thinly spread over its sides.

"(Feb. 11) . . . Some rather small pigeons (*Petrophila albipennis* Gould), of a dark brown colour, marked with a white patch on the wings, were seen, and some specimens shot. They made a whirring sound in flight, like the partridge, and appeared to haunt the rocks; a habit which all subsequent observation confirmed."

The anchorage referred to would have been on the easternmost and second largest of the islands now called the Sunday Islands; only the small northernmost islands of the group are still named the Roe Group. The type-locality of *Petrophassa albipennis* Gould may therefore be accepted as the easternmost of the Sunday Islands, 123° 13′ E, 16° 24′ 30″ S., at the mouth of King Sound, north-west Australia. This seems to be the first record of this species' occurrence on an off-shore island. The elucidation of the type-locality casts much doubt upon the validity of Mathews' race *alisteri* (*q.v.*).

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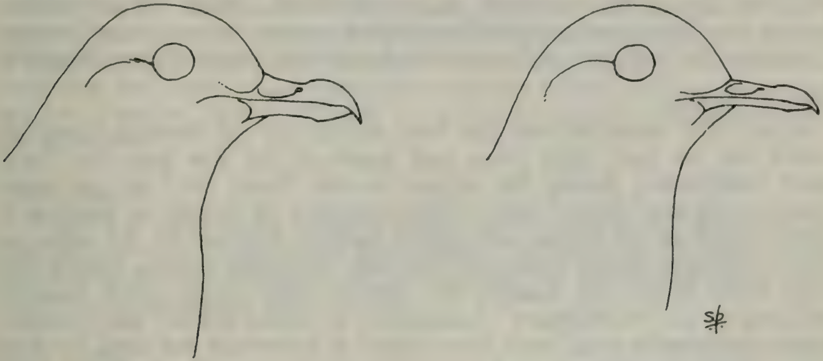
On the Thick-billed Ground Dove *Gallicolumba salamonis* (Ramsay)

by Shane Parker

Received 6th February, 1968

Nothing is known of the Solomon Islands Thick-billed Ground Dove, *Gallicolumba salamonis*, besides the descriptions of the only two specimens, the holotype from San Cristoval (Ramsay 1882) and a second specimen from Ramos Island between Ysabel and Malaita (Mayr, 1945: 228). The holotype, an adult male, in the Australian Museum, Sydney (registered number A. 13406) was purchased by the Museum of the collector, Mr. John Stephens, in 1883, in a collection of 91 bird skins obtained by Stephens at Wanu on San Cristoval and on the nearby island of Ugi. Stephens' original blue label is now missing, but the date of collection was given by Ramsay (1882: 300) as April, 1882, during which time Stephens was at Wanu or Wano [= Wanga or Wango Bay, 10° 18′ S., 15 miles E.S.E. of Cape Recherche, the northernmost tip of San Cristoval, *vide* Findlay, 1884: 842–3] which may be accepted as the type-locality. The second specimen, from Ramos, in the American Museum of Natural History, New York, was obtained by members of the Whitney South Sea Expedition.

It is surprising that the three main collecting parties to San Cristoval since the discovery of this ground dove, Albert Meek's in April-May, 1908 (Parker 1967: 135), the Whitney South Sea Expedition in 1927 and 1929, and the Oxford University Expedition in 1953 (Galbraith and Galbraith, 1962) failed to encounter it there. Although Meek's San Cristoval bird collection, a small one of about 180 skins from an unspecified locality, was not written up by Rothschild and Hartert as most of his other collections were, I assume that, had there been a specimen of *G. salamonis* amongst Meek's skins, it would have been remarked upon.



Gallicolumba salamonis *Gallicolumba stairi*
Heads of *Gallicolumba salamonis* and *G. stairi*, × 1, to show bill sizes.

As *Gallicolumba salamonis* has apparently never been figured, I include a sketch of the head to indicate the bill size as compared to a more typical member of the genus, *G. stairi* of Fiji and Samoa.

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Observations on wildfowl on the Batinah Coast, Muscat and Oman, south-east Arabia 1962-1967

by CARL SETON-BROWNE AND JEFFERY HARRISON

With supplementary observations from Dhofar compiled from notes by Colonel A. D. Lewis and Richard Matson

Received 8th March, 1968

Introduction

Attention has recently been focussed on the status and distribution of wildfowl in the Middle East. This was crystallised by Professor H. A. Isakov, representing Russia, at the Second European Meeting on Wildfowl Conservation held in Holland in May, 1966, when he pointed out that if adequate steps were to be taken to conserve the whole European breeding wildfowl population, the International Wildfowl Research Bureau would have to extend its activities eastward to cover the whole of the Indian sub-continent and southward in Africa to Lake Chad and the Middle Niger, so that all the wintering grounds could be studied.

Christopher Savage has already made an important start towards a Wildfowl Survey in south-west Asia (1965, 1966, 1967), but at present there is very little known about the wildfowl position in south-east Arabia, other than the brief and very incomplete details available in Meinertzhagen's *Birds of Arabia.*

Major Carl Seton-Browne has been serving on the Batinah Coast of Oman for the past eight years and much of his free time has been spent wildfowling during the winter months. Since 1963 he has been co-operating very closely with Jeffery Harrison in Britain in keeping a close record of the status and distribution of wildfowl in the area. A number of other British personnel have been serving in the area during this time, from which was formed the Batinah Gun Club, which became affiliated to the Wildfowlers' Association of Great Britain and Ireland. Acknowledgments to all who have helped in collecting the data for this paper will be found at the end.

In all, 18 species of wildfowl have been recorded, of which six were not recorded by Meinertzhagen for the whole Arabian peninsula. Of the remaining 12 species, nine were not recorded for Oman. Those new to Arabia are marked with an asterisk.

In view of the extreme paucity of published data about wildfowl in this area, it seems desirable to list their main haunts with a brief description of each.

Notes on the Batinah Coast of Oman.

This is a green, fertile belt of date and vegetable gardens extending in places up to three miles inland and running north from the town of Muscat some 200 miles to Murier on the borders of the Trucial Oman States. Low-lying flat country extends further inland in vast gravel plains to the foothills some 15 miles distant. These are covered with acacia trees, scrub bushes and in normal times a fair amount of other vegetation. In places the plains are broken up with masses of small wadis, gullies and ravines, which run down from the hills to the sea.

Khors and wadis

A khor is an inland lake or lagoon normally formed by the sea overflowing the top of the beach and filling up a depression. Sand bars can then build up closing the khor from the sea and in the course of time the water becomes brackish and vegetation appears along the sides of the khor. In some cases, the khor may be two or three miles long and a mile or more wide; in others it may only be a few hundred yards long and 20 yards wide.

A wadi is a gully or shallow ravine bringing rain water down from the hills. At the mouth of the wadi where it enters the sea there is normally a pool of fresh water which on high tides becomes brackish. These pools are used by waders and duck from August to March. They normally hold water, brackish or otherwise, all the year round, but in the event of a poor rainy season, will dry up. Some appear to be fed by springs and hold water all the year, whilst others dry up for no apparent reason. In some cases a wadi mouth can be closed by the formation of high sand bars and the wadi can then become a khor.

Khor Khashmir

This lies one mile north of the village of Sohar and is adjacent to the beach. Nearly a mile long and six hundred yards at its widest point, it is brackish, but fed by a spring and is up to five feet deep. It has never been dry, but twice in the past nine years the banks have burst and the sea has come in. This is probably the best khor along the Batinah Coast for wildfowl.

Khor Ghaleel

This lies 47 miles to the south of Sohar. It is formed by the Wadi Ghaleel and was closed to the sea some years ago by the formation of a heavy sand bar. It always has fresh water and is much used by waders and duck, being shallow and no deeper than two feet.

Khor Dhian

This lies fifty miles south of Sohar and is a beautiful piece of fresh or brackish water half a mile long by quarter of a mile wide. Formed by the Wadi Dhian, it has never been dry in the history of Oman. Being quite deep in the middle (probably ten feet) it is favoured by the larger duck such as Mallard and Wigeon.

Khor Sur Baluch

A tiny piece of brackish water which lies some 20 miles north of Sohar. Although only 200 yards long and ten yards wide, duck like it.

Khor Bu Bakra

A small stretch of land-locked brackish water, rather isolated and used by most species of duck and waders, but is normally dry during the summer months.

Khor Salaghin

Another small area of land-locked water not far south of Bu Bakra. Normally dry in summer, but fed by a wadi during the rainy season, it is 100 yards long and ten yards wide. Favoured by duck and waders.

Khor Kelba

Not a wadi, but a huge khor and mangrove swamp, which is situated just over the northern border of Oman and which is really in the Trucial Oman States and not in Oman proper. It lies 50 miles north of Sohar and runs for about four miles, being fed by the sea and liable to flood at high tide. It is frequented by numerous flamingos and at times holds thousands of waders, but is not much used by duck.

Wadi Kharbora

This lies 32 miles south of Sohar and consists of a normal wadi running down to the sea from the hills. There is a good stretch of fresh or brackish water at the mouth, which always holds duck or waders in season and is a favourite haunt of watering sandgrouse and Collared Doves. It never dries out.

Wadi Asafin

A normal wadi mouth running down to the sea from the hills. There is a pool of fresh water during the rainy season, which dries up during the summer. Situated some 25 miles north of Sohar it holds duck and waders during the season.

Wadi Umm al Enna

A small pool at the wadi mouth fed by rains and situated some 20 miles north of Sohar, which dries in summer. Much frequented by waders and duck.

Wadi Houbara

This lies 18 miles south of Sohar. A normal wadi mouth has formed which holds a fair-sized pool of brackish water all the year round, surrounded by lush grass much favoured by Wigeon. Most species of duck have been shot at this wadi.

Wadi Shinas

This lies 38 miles north of Sohar. Shinas is one the principal towns of the Batinah Coast. Wadi Shinas is the mouth of five wadis which run down from the hills and converge on Shinas. This is an attractive stretch of brackish water, nearly a mile long and half a mile wide in places. Considerable numbers of duck normally use the wadi, but during the season 1967–1968 no duck have been seen there. No explanation for this can be given, for the wadi is isolated and in former years has been well used.

Wadi Suwera

A normal wadi running down from the hills, eight miles south of Sohar. It provides a permanent pool of brackish water. Being close to the village of Suwera it is not much used by the larger duck, but is well used by Teal and Garganey and occasional Tufted Duck. There are nearly always a few Coot in winter. Some reed cover is established and it is surrounded by grass.

Wadi Salan

A huge wadi embracing probably seven wadis including the Wadi Jizzi. At the mouth, which is a mile wide, it runs out to the sea over vast sand flats, which at low tide are exposed to a distance of over a mile. It has fresh water all the year and lies five miles north of Sohar. It is favoured by many duck, particularly Mallard and Wigeon, as well as thousands of waders, gulls and terns.

Wadi Saham

A huge wadi similar to Wadi Salan. Situated 16 miles south of Sohar; vast sandbanks are exposed at low tide. It is over a mile wide at its mouth and holds a permanent sheet of water nearly a mile long. All types of duck use this wadi and numerous waders.

Wadi Zaharan

Another typical wadi running down from the hills to the sea, six miles north of Sohar. There is a small pool of fresh water during the rainy months only. It is isolated and well used by duck and waders.

Wadi Majiz

A normal wadi, 11 miles north of Sohar. There is a good-sized brackish pool nearly all the year round, visited by ducks, particularly Teal during some seasons, but none was shot there during 1967–68.

Wagjgah Pools

Not really a wadi, but inland pools of fresh water caused by rain, situated on the northern frontier of Oman and some 15 miles from the sea. Teal have been seen there, but normally frequented by watering sandgrouse.

Wadi Sheikh's Tomb

Situated three miles south of Sohar, this is usually closed to the sea, but in 1967 it was breached by flood water. Normally it holds fresh water all the year round and is very narrow and long with gardens on both sides and growing lush grass and other vegetation. Most species of duck have been seen there.

Wadi Jizzi

This is the main caravan route from the Batinah to Buraimi Oasis, as used for thousands of years. There are 72 miles of ravines, with numerous pools of beautiful fresh water all the year round. Duck use all of it, as do waders. The mouth of this water forms Wadi Salan.

Quram—Muscat

A marshy area which lies 15 miles to the north of Muscat, formed by rain water. Some mangrove grows here and lush grass, but it dries out in some years.

Swaiq

One of the principal towns of the Batinah Coast situated 60 miles south of Sohar. There is a large marshy area just to the south of the town which holds a lot of duck in some years.

Nizwa

The old capital of Oman lying deep in the interior. A green and pleasant place not far from Jebel Akhdar. There are numerous pools of fresh water in wadis, which hold a lot of duck on occasions.

Sib

An important village on the Batinah, 35 miles north of Muscat. Three wadis running down from the hills hold duck quite frequently.

The weather on the Batinah

In a normal season, there would be only one or two days rain in each month from September-February inclusive. This was so from 1959–1961 inclusive, but 1962 was dry and 1963 abnormal, with heavy rain and freak storms in May. This gave rise to the heaviest rainfall for ten years, which was followed by a most profuse growth of vegetation, which lasted well into the following year. Wildfowl migration was very marked in the late autumn of 1963.

The next year, 1964, saw the start of a four year drought, which caused all the vegetation to die and this was not broken until January, 1968.

Species List

*Grey Lag Goose *Anser anser* ssp.

This species has been identified singly in the field as follows:—

27th November, 1962	Wadi Saham
12th November, 1964	Kor Ghaleel (Col. A. D. Lewis)
27th November, 1964	15 miles south of Kharbura

*White-fronted Goose. *Anser albifrons* ssp.

An adult was shot at Khor Dhian on 16th November, 1962. This bird was photographed and the photographs have been examined by J.G.H. Two others were seen at Khor Khashmir only four days later.

Ruddy Shelduck. *Tadorna ferruginea* Pallas

A rare winter visitor to the Batinah, having occurred in four winters between 1962–1963 and 1967–68.

One which was shot at Khor Khashmir on 30th September, 1962 was probably the same bird which had been seen on Wadi Salan the previous day. A first winter drake was shot from a party of four, in company with three Pintail and eight Teal on Khor Ghaleel on 3rd November, 1964. Two more were shot on Khor Ghaleel on 27th November, 1964 and two others were seen on Wadi Saham. Probably the same two were seen on Wadi Shinas three days later.

A party of four was found on Wadi Salan on 13th January, 1967, and single birds were seen there on 7th February and at Wadi Salan on 2nd March, 1967. Another was present at Khor Khashmir on 18th October, 1967

*Shelduck *Tadorna tadorna* (Linnaeus)

An unusual winter visitor to Oman, in small numbers, as the following records show:—

29th	October, 1962	One	Khor Khashmir
9th	November, 1962	Seven	Wadi Saham
19th	December, 1962	Two	Wadi Saham
Early	December, 1964	One	Sib, near Muscat (Col. A. D. Lewis)
15th	December, 1964	1st winter ♂	Shot Khor Ghaleel (one of a pair)
17th 1st	December, 1964 January, 1965	One, 1st winter	Seen and eventually shot Wadi Saham
28th	November, 1967	1st winter ♂	Shot Wadi Salan

Pintail *Anas a. acuta* Linnaeus

This species is a regular autumn passage migrant on the Batinah in small

Photographs by David Harrison

Wildfowl habitat on the Batinah.
Above: Khor Khashmir. *Below:* Wadi Sheikh's Tomb.

numbers. There is only one August record of a single bird shot on 20th in 1961. Four were seen at Khor Shinas on 4th September, 1965 and one on 10th. It is most regularly seen from the second half of September until the end of November and has been recorded on all the khors and wadis. The maximum on any one day was 30, on 22nd October, 1967 at Wadi Saham.

The only December records were:—in 1963—three on 21st; in 1964—three on Wadi Shinas on 3rd December and singles on Wadi Kharbura on 8th and Khor Ghaleel on 15th; and in 1967, three on Wadi Saham on 12th, one the next day and another on Khor Dhian on 25th December. There are no January records, but there is evidence of a return migration through the Batinah. In 1962, one was seen on 1st February and a pair on 12th, as well as a further pair on 6th March. A drake was seen at Wadi Salan on 4th February, 1966 and a pair there on 14th. One was seen at Khor Khashmir on 15th February, 1967, another at Wadi Salan on 25th and one at Wadi Salan on 2nd March, 1967. A duck at Wadi Sheikh's Tomb on 5th April, and another at Wadi Salan on 15th April, are the latest recorded.

Of the wings examined two were first year drakes and two were ducks.

Teal. *Anas c. crecca* Linnaeus

This duck is a common winter visitor to the Batinah, arriving mainly about mid-September, the only August record being one on 18th August, 1962 on Khor Khashmir. Although a number winter in the area, many parties have been observed moving further on, following the coast, particuarly in September and October.

Teal frequent all the suitable khors and wadis throughout the Batinah, the peak numbers seen in December and January, although the largest flock on any one water seldom exceeds 50. However, there are a number of suitable areas and Teal have been recorded regularly on the following: Wadis Salan, Saham, Shinas, Zajaran, Asafin, Kharbora, Suwera, Wagjgah and Majiz, and Khors Ghaleel, Khashmir, Dhian, Salghin, al Shoah, Bu Bakra and Sur Baluch. It is thus the most widespread duck wintering on the Batinah coast, which probably holds at least 1,000 Teal in normal times. In the drought conditions at the close of 1967 Teal were in much smaller numbers than usual, the biggest numbers being seen in November and the largest party being 46, at Wadi Saham on 7th. Numbers fell away in December and by the end of the year virtually all had left the Batinah.

Most Teal have normally left the Batinah by mid-February, but in 1967 they were exceptionally late. On 2nd March, 43 were still present on Wadi Saham, 11 on Wadi Salan and three on Wadi Kharbora. A pair was seen at Wadi Saham on 14th March; there were nine on Khor Shinas on 29th March; ten on Khor Khashmir on 2nd April and six on Wadi Saham on the same day.

Of the wings examined, two were adult males, three were adult females, seven were first year males and seven were first year females.

Mallard. *Anas p. platyrhynchos* Linnaeus

The Mallard is a regular visitor to the Batinah in small numbers, having been recorded from 15th October to 12th March. One near Swaiq on 13th June, 1963, was probably a wounded bird. It has been recorded on all the wadis and khors, most frequently in November and December, suggesting that these birds may be moving on to the south The most seen on any one day has been six.

Gadwall. *Anas s. strepera.* Linnaeus

The Gadwall is an irregular winter visitor to the Batinah in small numbers having been recorded as follows:—

10th	February, 1962	One	Khor Khashmir
16th	November, 1962	One	Khor Dhian
15th	December, 1962	One	Khor Khashmir
28th	December, 1962	One	Wadi Salan
18th	January, 1963	Five	Khor Khashmir
20th	November, 1964	1st winter ♂	Shot Khor Ghaleel
23rd	November, 1964	Four	Wadi Shinas
26th	December, 1964	Five	Wadi Kharbora
1st	January, 1965	Two	Khor Ghaleel
3rd	February, 1967	One	Wadi Saham
2nd	March, 1967	Two	Wadi Saham
3rd	April, 1967	Two	Khor Khashmir

Wigeon. *Anas penelope* Linnaeus

This is one of the later ducks to arrive on the Batinah in autumn. The earliest recorded were six on Khor Ghaleel on 20th October, 1964 and ten on Khor Khashmir. Regularly seen from November to January in small numbers (maximum nine) on those two khors, and on Wadi Salan, Wadi Shinas, Wadi Saham and Wadi Suwera. The first record in the autumn of 1967 was one on Wadi Saham on 9th November. Eight days later there were four on Khor Dhian and three on Wadi Saham. From then until the end of the year, four were the most seen in any one day. There is only one record for February—a female at Wadi Salan on 4th February, 1966. Late records, probably returning migrants, include three at Wadi Salan and two at Wadi Kharbora on 2nd March, 1967 and the latest of all, a female at Wadi Salan on 30th April, 1967.

Garganey. *Anas querquedula* Linnaeus

This species is always the first to arrive in numbers on the Batinah in autumn; it is then seen regularly until early October, with stragglers into early November. In some seasons large numbers have been seen moving south-eastwards off shore, apparently without stopping, but there is considerable annual variation

1962. First seen on 13th August. A flock of 200–250 was seen heading south off Wadi Saham on 11th September and a party of 25 was found on Khor Khashmir on 17th September. The last were seen on 26th October.

1963. This autumn followed prolonged and severe heat and the heat had also been exceptional as far north as Iraq. Duck arrived late in Oman; one flock of about 60 Garganey was seen near Muscat on 15th September and 15 at Wadi Salan on 26th October, while there were a few on Khor Khashmir on 1st November.

1964. Similar conditions prevailed in 1964 and duck were again late in appearing on the Batinah. Seven Garganey were seen at Swaiq on 29th September, and up to three were seen at Wadi Salan, Wadi Saham, Wadi Shinas and Khor Dhian until 24th October.

1965. The first was seen at Wadi Saham on 14th August and small numbers thereafter including 11 at Qurum, near Muscat, from which Colonel A. D. Lewis shot two on 25th August. Numbers increased in September, reaching a peak between 19th September when 23 were found on Khor Ghaleel, 21 on Wadi Saham and four on Wadi Suwera and 30th, when 42 were present on Wadi Suwera and 22 on Wadi Saham, by which time there were reports of small numbers all along the Batinah coast and as far inland as Nizwa, Wadi Jizzi and Wadi Kelba. Five were seen at Khor Hai, to the east of Sib on 17th October and the last two at Khor Shinas on 22nd October.

1966. An adult drake at Khor Dhian on 1st August heralded the most remarkable autumn migration through Oman, which reached a peak in September when on the 7th huge flocks amounting to many hundreds were seen flying south between Sohar and Saham. On 17th, 150 were resting on Khor Dhian. Next day 200 were seen flying south-east off Sohar at dusk. Large scale coastal migration was seen again on 28th September, 3rd and 4th October, including six flocks of about 100 on 4th. Next day seven flocks of 60–100 birds flew south-east over Wadi Suwera and a similar movement on a slightly reduced scale was noted until 8th. Numbers then decreased sharply but eight were recorded at Wadi Suwera and five at Khor Khashmir on 22nd October. Three single birds were shot in November, the last on the 16th at Wadi Suwera.

1967. The first was recorded on 13th August at Khor Khashmir. From then, Garganey were regularly recorded on the khors and wadis of the Batinah until 22nd October, but in smaller numbers than usual, in a very dry season, with a maximum of only 11 at Khor Khashmir on 22nd September and nine at Wadi Sheikh's Tomb on 22nd October. However, during most days of September, between the hours of 1400–1700, numerous packs of Garganey were observed heading south down the Batinah coast, flocks ranging from 25–200 birds.

Late records included eight at Wadi Suwera on 7th November; two at Khor Dhian on 14th November; one at Khor Khashmir on 19th November; three at Khor Dhian on 9th December; one at Khor Khashmir on 23rd December and seven at Wadi Sheikh's Tomb on 26th December. These records are exceptionally late and are all the more surprising as the Batinah was by then suffering an extremely severe drought.

Return migration is on a greatly reduced scale. In 1963, a single bird was seen on the Batinah on 22nd–23rd February; two on 21st April and one on 23rd. In 1967, two were seen at Wadi Salan on 25th February and a further pair on 6th March.

Of the wings examined, five were adult males, two were adult females and two first year females.

Shoveler. *Anas clypeata* Linnaeus

Although the Shoveler can be expected to arrive on the Batinah regularly with the Teal in mid-September, a few have been recorded earlier. There are four August records—26th August, 1961, one shot at Khor Khashmir and on 28th August, 1965. On 25th August, 1966, a drake was shot at Wadi Saham, which was very thin and had obviously only recently arrived, while another was seen there five days later. Occasionally Shovelers are much later arrivals, as in 1963, following the prolonged heat, when the only records for the whole winter were of two shot at Wadi Saham on 26th October and one shot at Swaiq on 25th January, 1964. They were late again in the following autumn, the first arrivals being seen on 17th October.

Shovelers are most regularly seen from mid-October to mid-December, but only in small numbers up to 12. They occur on all the wadis and khors. There are only four reports for January, which suggests that this species moves further on at this time.

In 1967, the first Shoveler was not seen on Khor Khashmir until 23rd September, but on 30th there were 18 on that water, falling to 11 next day and three the day after. From then on, the pattern was much as usual, but all had gone by December, except for one on Khor Khashmir on 29th December.

There is some evidence of a return migration for in 1962, up to three Shovelers were seen on the Batinah between 6th February and 11th March and one on 15th April. Single birds were seen on 23rd April, 1963 and 28th March, 1967 at Khor Khashmir.

Wings examined have included two adult males, one adult female, two first year males and one female.

*Red-crested Pochard. *Netta rufina*. Pallas

The only records are for 1964. A male and female were shot at Wadi Shinas on 18th November and another pair from three birds on 8th December at Khor Ghaleel. Four days later, three were seen at Wadi Shinas and on 15th December there were two at Khor Ghaleel.

Pochard. *Aythya ferina* Linnaeus

This species is probably fairly regular on the Batinah in early winter. A female was shot on 7th November, 1963 on Khor Khashmir. Ten were seen there on 20th November, 1964 and again a week later, while seven, possibly some of the same birds, were seen at Wadi Saham on 24th November. From one to five birds were seen at Wadi Salan, Wadi Kharbura Khor Khashmir and Khor Ghaleel during December. In 1966, six were shot between 1st November and 16th November on Khor Khashmir.

In 1967, one was present on Khor Khashmir on 13th October and four more on 20th; two were seen at Wadi Sheikh's Tomb on 6th November, four at Khor Khashmir on 8th, three on Khor Ghaleel on 17th and three at Khor Khashmir on 20th. The only December record is of two at Wadi Sheikh's Tomb on 15th.

Only 13 were seen in the autumn and winter of 1967, no doubt due to the very severe drought which by then had affected the Batinah coast for the past two years. This doubtless accounts for the fact that no Gadwall, Red-crested Pochard or Sheldduck were seen at this time and the generally poor showing of Wigeon and Pochard. On 3rd January, 1968, the only duck seen when motoring for 130 miles southwards from Sohar were 14 Teal near Khor Dhian and by 23rd January there were no duck anywhere.

Of eight wings examined, three were drakes.

Ferruginous Duck. *Aythya nyroca.* Güldenstädt.

Three have been shot, all within a month, as follows:—

11th November, 1962	Khor Khashmir
16th November, 1962	Khor Dhian
4th December, 1962	Khor Khashmir

Tufted Duck. *Aythya fuligula.* Linnaeus.

This is a regular winter visitor in small numbers. Three were seen on Khor Khashmir on 28th February, 1962, eight on 2nd November and 27 on 6th November, 1963. In 1964, five were found at Wadi Shinas on 18th November, one at Wadi Zajaran next day and four at Wadi Asafin on 23rd. Six more were recorded on 8th December. Three singles were seen in 1965; on 12th October at Wadi Suwera; 25th December at Wadi Salan and 31st at Khor Kharbora. The same applied in 1966; one at Khor Khashmir on 6th October and 20th November and one at Wadi Salan on 28th October.

In 1967 there were rather more records than usual, starting with 12 on Wadi Sheikh's Tomb on 23rd October. From then until 12th December there were 10 records of ones and twos from there and on Khors Khashmir, Dhian and Sahan and Wadi Suwera.

The fact that all these records except one fall between 6th October and 31st December suggests the possibility that these birds may be on passage and the one February record could be of returning migrants.

*Indian Pigmy Goose. *Nettapus c. coromandelianus* Gmelin.

A first winter female was shot by C.S-B. on 15th December, 1967 on Khor Dhian. This is the first record for Arabia and the most westerly ever recorded. It was a lone bird in company with a Coot *Fulica a. atra* Linnaeus.

It is of considerable interest that another Indian species, the Pheasant-tailed Jacana *Hydrophasianus chirurgus* Scopoli had been shot by C.S-B. on Khor Khashmir on 9th December, which was only the second record for Arabia and the first for Oman. On the same day that the Pigmy Goose was collected, a Red-necked Phalarope *Phalaropus lobatus* Linnaeus, which winters in the northern Indian Ocean was also obtained on Khor Dhian, while only two days prior to this a Spotted Crake *Porzana porzana* Linnaeus was obtained on Khor Khashmir. This is only the second record for Oman and is another species which winters in northern India. It seems possible therefore that there may have been suitable weather conditions to cause a westerly drift into Arabia.

*Spur-winged Goose. *Plectropterus gambensis.* Linnaeus.

Five birds seen at Wadi Saham on 6th January, 1963, were identified as being this species by C.S-B., who knew this distinctive bird well in Africa.

*Common Scoter. *Melanitta n. nigra.* Linnaeus.

One shot near Swaiq on 27th November, 1962 and another at Khor Khashmir next day. One of a pair shot at sea off Sohar on 29th January, 1963.

Supplementary observations from the Salalah area, Dhofar Province. Compiled from notes by Colonel A. D. Lewis and Richard Matson

Salalah is situated on the south coast of Muscat and Oman, about 500 miles south of the capital, Muscat. There are about 15 khors along the Salalah coastal plain, which extends between mountainous regions for a distance of about 40 miles. From the air it was possible to see that some of these khors held duck, but others appeared empty.

The hills give rise to a local monsoon season lasting from the end of May until mid-August, during which time there is almost continuous drizzle. As a result there is much more water in this area than in northern Oman.

Colonel Lewis was able to visit two of these khors. Khor Salalah and Khor Marmorah on either side of the town of Salalah. This area was visited about every six weeks from late 1964 until early 1967. Duck were only found on these khors between the months of October and February, which is a noticably shorter time than they spend in northern Oman. The only exception to this was a lone duck Mallard on a khor about 12 miles west of Salalah in April, 1965. When disturbed it flew strongly out to sea.

The two khors, Salalah and Marmorah are bigger and have more cover than those in northern Oman. There is a great deal of submergent growth and an abundance of mosquitoes.

The following details are taken from Colonel Lewis's game book:—

21*st December*, 1964. *Khor Marmorah.*
3 Wigeon
4 Teal
1 Shoveler
1 Tufted Duck

4*th*–5*th November*, 1965. *Khor Salalah.*
2 Teal

8*th November*, 1965. *Khor Marmorah*
1 Mallard
1 Teal
1 Wigeon
1 Pochard

17*th December*, 1966. *Khor Salalah.*
1 Teal

18*th December*, 1966. *Khor Marmorah.*
1 Teal
1 Garganey
1 Shoveler
3 Pochard
1 Tufted Duck

19*th December*, 1966. *Khor Salalah.*
2 Pintail
3 Wigeon
1 Teal
3 Tufted Duck

19*th December*, 1966. *Khor Marmorah.*

1 Wigeon
1 Shoveler

20*th December*, 1966. *Khor Salalah.*

1 Teal

11*th February*, 1966. *Khor Marmorah.*

4 Pintail
6 Teal
2 Garganey
3 Shoveler
2 Tufted Duck

12*th February*, 1966. *Khor Marmorah.*

2 Pintail
1 Wigeon
3 Teal
3 Shoveler

These bags reflect on the commoner species present. On 18th December 1966, it was estimated that there were 600 duck in all on Khor Marmorah. Coots were also extremely plentiful on both khors.

In general, the Mallard was the least common of the species shot and no other species apart from those listed in the game book was ever seen or reported.

Richard Matson was in Salalah in mid-winter 1965–1966 and on one khor he estimated that on an average day there were 300 Wigeon, 100 Shoveler, 50 Pintail and smaller numbers of Teal, Garganey, Pochard and Tufted Duck amounting in all to about a further 100 duck. One Gadwall was also shot here and a single female Ferruginous Duck in December, 1965.

It is believed that these are the first observations ever to be made in Dhofar Province.

Discussion

While it is highly likely that the khors and wadis of Muscat and Oman provide a wintering ground for a number of the duck mentioned in this paper, especially Teal, others, in particular Garganey, are quite obviously passage migrants. Furthermore, the southward passage in autumn is much more marked than the return migration in spring.

The species now recorded in Oman are virtually unstudied so far as their movements are concerned and there are no ringing recoveries as yet to help to provide some of the answers. If one considers the winter distribution maps as given in Delacour's volumes *The Waterfowl of the World* however, it becomes obvious that the majority of the species occurring in Oman represent only a short southward extension of range across the Gulf of Oman from Persia and in most, the normal wintering range extends south-eastwards into the Indian sub-continent.

The species which fit into this category and which probably move on in this direction from Oman include the Ruddy Shelduck, Shelduck, Mallard, Teal, Wigeon, Pintail, Gadwall, Shoveler, Red-crested Pochard, Pochard, Tufted Duck and Ferruginous Duck.

Most of these species do not have a normal winter distribution in Somalia and southwards to East Africa, although the Pintail and Shoveler both move down the Nile valley to reach Lake Victoria. The Ferruginous Duck winters in S.W. Arabia and Somalia, but it is unlikely that any of these three species should reach their winter quarters in these parts other than by way of the Nile and Red Sea, which provide the obvious flyways. The only species which is widely distributed not only in the Indian subcontinent but also along the southern Arabian coastline and in East Africa, is the Garganey.

Garganey in autumn passing south-eastwards along the Batinah coast could possibly be heading either towards India or Africa, but if the latter, then there would have to be an abrupt alteration of direction to a south-westerly direction. Although this is by no means impossible, it is certainly the least likely of the two alternatives.

The records of the Grey Lag and White-fronted Goose are the most southerly yet recorded; that of the Spur-winged Goose, a sedentary African species is the most easterly and the Indian Pigmy Goose the most westerly record. This species is stated by Delacour to be largely sedentary except for the most northerly populations (particularly in China) which move south in winter. The Common Scoter has been recorded as a casual visitor to the Caspian and Black Seas.

ACKNOWLEDGMENTS

We are most grateful to Colonel A. D. Lewis, D.S.O., M.B.E., and Squadron-Leader Richard Matson for sending us details from Salalah, the latter through the good offices of Lieut.-Commander John Anderton, the Director of WAGBI.

Major A. C. G. Gordon has been most active in assisting C.S-B. on the Batinah and others who have also helped are Captain I. R. Donaldson, Major M. Legg, Captain W. Peat and Mr. P. Smith. We are much indebted to them all and to Dr. David Harrison, PH.D., for allowing us to use two of his photographs of the area, taken while on an expedition there in 1967.

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BRITISH ORNIT

INCOME AND EXPENDITURE ACCOUNT FO

1966	Expenditure	£ s. d.	£ s. d.
	Bulletin Vol 86—		
	Cost of Publication, Distribution, etc.	692 4 4	
479	*Less* Sales	233 19 1	458 5 3
41	Notices, etc. for meetings		45 11 6
5	Audit Fee		5 5 0
5	Contribution *Zoological Record*		5 5 0
7	Expenses of Guest Speakers		5 1 6
8	Club Guests		11 14 1
16	Projectionist		16 5 6
35	Miscellaneous Expenditure and Postage		13 15 6
50	Loan Interest (Gross)		— — —
£646			£561 3 4

120	Excess of Expenditure over Income brought down	79 17 6
148	Transfer to General Fund	170 16 2
£268		£250 13 8

BALANCE SHEE

		£ s. d.	£ s. d.
	General Fund:		
	As at 31st December, 1966	747 3 5	
	Add Transfer from Income and Expenditure		
747	Account	170 16 2	917 19 7
	Bulletin Fund:		
6	Donations from Members		6 1 0
134	Subscriptions 1968 paid in advance		38 10 6
87	Creditors		95 5 0
£974			£1,057 16 1
	Trust Fund:		
	(The Capital of this Fund may not be used. The Income from it is General Revenue.)		
1,000	F. J. F. Barrington Legacy		1,000 0 0
£1,974			£2,057 16 1

R. S. R. Fitter, *Chairman*
P. Tate, *Hon. Treasurer*

We have examined the above Balance Sheet and Income and Expendit
be in accordance therewith.

Finsbury Circus House,
Blomfield Street, London, E.C.2.
1st March, 1967

LOGISTS' CLUB

HE YEAR ENDED 31st DECEMBER, 1967

1966	INCOME	£ s. d.	£ s. d.
	SUBSCRIPTIONS:		
	Members	355 8 3	
364	Associates..	2 2 0	357 10 3
55	Income Tax recovered under Deeds of Covenant 1966/67		63 8 0
	INVESTMENT & DEPOSIT INCOME:		
	General Fund	12 7 11	
107	Trust Fund	48 19 8	61 7 7
120	Balance excess of Expenditure over Income carried down		79 17 9
£646			£561 3 4

		£ s. d.
—	Sales of *Scientific Index*	3 9 1
96	Sales of *Bulletin* for previous years less expenses	115 15 7
172	Rent less Expenses—Property "Clovelly" ..	131 9 0
£268		£250 13 8

st DECEMBER, 1967

		£ s. d.	£ s. d.
	GENERAL FUND, INVESTMENTS:		
100	£100 3% Savings Bonds 1960/70, at cost ..	100 0 0	
20	*Less* Reserve	20 0 0	
	(Market Value 1967: £89)	80 0 0	
80	(Market Value 1966: £87)		
1	PROJECTOR, LANTERN & SCREEN—Nominal Value		1 0 0
1	Stock of *Bulletin*—Nominal Value		1 0 0
	No value has been included for the stock of the *Scientific Index*		
892	CASH AT BANK AND ON DEPOSIT		975 16 1
974			1,057 16 1
	TRUST FUND INVESTMENT:		
1,002	£1,399 11*s.* 0*d.* 3½% War Stock		1,000 0 0
	(Market Value 1967: £693)		
	(Market Value 1966: £728)		
£1,974			£2,057 16 1

count with the book and records of the club and Certify them to

W. B. KEEN & CO.,
Chartered Accountants.

British Ornithologists' Club

REPORT OF THE COMMITTEE

FINANCE

The past year has been a satisfactory one for the Club, considering the constant rise in costs of virtually everything.

Expenditure has fallen from the previous year's figure on most items, but mainly because there has been no loan interest to pay, and miscellaneous expenses have been cut.

The cost of the *Bulletin* was down by £21, but unfortunately with effect from January, 1968 the cost of printing has gone up by 5%, so that we cannot hope to reduce costs on this item in 1968.

The income from ''Clovelly'' has been reduced by unavoidable repairs to the fence, etc. and unfortunately minor damage caused by recent severe gales, etc. will result in some further repairs this year.

The income from Members' subscriptions is down a little, which is part due to quite a large number of Members continuing to pay at the old rate of 21*s*. We would greatly appreciate Members' co-operation on this matter, and make sure that their Bank pays on the New Bankers orders sent to all Members when the subscription was raised in 1963, not on the old one, or in quite a few cases on both!

CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

Proofs must be returned without delay. No changes may be made at this stage, other than corrections. At the discretion of the Editor, the Club will pay for a reasonable number of monochrome blocks, which the contributor may retain for his own use.

Contributors are entitled to a maximum of thirty free copies of the *Bulletin*, supplied only as specifically requested by authors. Those contributing to a meeting should hand in their MS. at that meeting; otherwise a note will be inserted mentioning the contribution.

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CORRESPONDENCE

Other correspondence should be addressed to the Hon. Secretary, Mr. Martin W. Woodcock, 34 Hill Road, Theydon Bois, Essex.

DINNERS AND MEETINGS FOR 1968

16th April, 21st May (provisional).

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6 MAY 1968

BULLETIN
OF THE
BRITISH ORNITHOLOGISTS' CLUB

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The six hundred and fifty-first meeting of the Club was held at the Rembrandt Hotel, London, on the 16th April, 1968.

Chairman: Mr. R. S. R. Fitter

Members present: 18; Guests 5.

Mr. Philip Wayre, Director of the Ornamental Pheasant Trust, showed and commented upon a colour film made by him in Taiwan, the main theme being the sending by the Trust of thirty Swinhoe's Pheasants bred in the Trust's collection at Great Witchingham, Norfolk, as a gift to the Taiwan Government.

Six pairs of the birds were released in a forested area of several hundred square miles, an uninhabited place under the control of the University of Taipeh. The remaining birds are being kept in aviaries where they should breed, and any resulting young will be released.

Seven wild specimens of Swinhoe's Pheasant were seen by Mr. and Mrs. Wayre on their tour of the island, but only one of the other indigenous pheasant, the Mikado, *Syrmaticus mikado*, which appears to be the rarer of the two and which certainly inhabits less accessible places and higher altitudes. Both species are now protected by the Taiwan authorities.

Notes on the diving-petrels

by W. R. P. BOURNE

Received 8th March, 1968

The diving-petrels of the genus *Pelecanoides* are a group of extremely similar small petrels which ecologically replace the smaller auks Alcidae and especially the Little Auk or Dovekie *Plautus alle* in the southern hemisphere. They have been the subject of a classic review by Murphy and Harper (1921) who first demonstrate the remarkable convergence in form and appearance between these two apparently unrelated groups, and then go on to recognise five species of diving-petrel, the large Potoyunco or Peruvian Diving-petrel *P. garnoti* frequenting the area of cool upwelling water off western South America; the medium-sized Magellanic Diving-petrel, *P. magellani* occurring in the marine channels of southern South America; the small Georgian Diving-petrel *P. georgicus* occurring at South Georgia and by repute Macquarie Island; *P. exsul* occurring at other islands in those latitudes, and a number of races of *P. urinatrix* found around the coasts and islands of the Subantarctic Zone to the north of it.

Further study by a number of authors has suggested that the first three, which have a rather similar nasal structure, are indeed well-defined allopatric entities, but that *P. exsul* and *P. urinatrix* which both have a rather distinct nasal structure, while themselves allopatric, may at times be sympatric with at least two of the other three forms, and these are now usually treated as conspecific under the name Common Diving-petrel *P. urinatrix*. It is the purpose of these notes to document the sympatry of members of the genus and compare again the character of the different populations of the *urinatrix* group.

Although Murphy collected a vast series of *P. georgicus* when he discovered it on South Georgia, he found only the one species there. Most subsequent investigators have reported it too, while several recent authors including Murphy himself (1964) have mentioned that *P. urinatrix* has also recently been found there as well, though details seem not to have been published previously. They are of some interest; apparently attention was first drawn to the fact that two species might be present by Dr. Theresa Clay when she found that a series of spirit specimens of *Pelecanoides* in the British Museum (Natural History) taken by Dr. W. L. N. Tickell on Bird Island between January and March, 1959 carried two species of feather-lice, and on further examination by Dr. R. A. Falla the series was found to include two species of diving-petrel. *P. georgicus* and *P.* (*u.*) *exsul*. Most of the birds were collected as they flew into the base lights on foggy nights, including six *P.* (*u.*) *exsul* on 14th February and four more with four *P. georgicus* on 18th February, but the series also includes a feathered chick of *P.* (*u.*) *exsul* aged some six-eight weeks dug out of fine scree slopes at 400 ft. above the tussock zone on 11th January. A further search of the British Museum collections revealed not only more spirit specimens of *P. georgicus* including one from Grytvicken on 15th October, 1928 and two from the nest at Maivecken registered in 1931, but also the skin of a female *P.* (*u.*) *exsul* with a large ovary taken off Gryfiske on 15th October, 1956. Nearer South America a male *P.* (*u.*) *exsul* was also taken off the isolated Shag Rocks on 2nd September, 1934.

The series of *P.* (*u.*) *berard* from the Falkland Islands, where this is again the only species previously recorded, also proves to contain two examples of another species, also apparently first identified by Dr. Falla, this time *P. magellani*, including one without data registered in 1888, and a male taken by J. E. Hamilton at Cape Pembroke Light on 29th March 1930, a locality from which he also had *P.* (*u.*) *berard* on other dates. An example of *P. magellani* preserved in spirit with six *Garrodia nereis* and a "Discovery" label marked "Two packets of petrels, lighthouse, 1936" may also have come from here, as may an unlabelled spirit specimen of *P. magellani* brought home by the British Graham Land Expedition the same year. It has already been implied by Murphy (1936) that these two may breed in the same area off southern South America, although the nesting place of *urinatrix* there does not seem to have been found yet (Johnson, 1965), and the British Museum spirit collection also proves to contain a specimen of the *urinatrix* group of races taken in the centre of the range of *P. magellani* just north of the Straits of Le Maire on 29th April, 1927. Thus birds of the *P. urinatrix* type may well be sympatric with *P. magellani* as well as *P. georgicus* in this region.

Table 1

Comparisons of some selected series of *Pelecanoides*

	Number	*Wing*	*Tail*	*Culmen*	*Taraus*	*Mid-toe*
P. georgicus from South Georgia:—						
in spirit	7	110—120	35—43	15—17	23—26	27—31
		115±1.0	38.7±2.6	15.7±.73	24.7±1.2	28.3±1.3
dry skins	6	113—118	37—41	all 15	24—25	28—31
		117±2.1	39.5±1.3		24.7±.50	28.9±1.3
P. urinatrix from South Georgia:—						
in spirit	11	116—124	38—40	15—18	25—27	30—33
		120±3.3	39.1±.78	15.9±.89	25.9±.89	31.5±.89
dry skins	2	119, 121	37, 39	17, 18	25, 26	31, 32
P. urinatrix from Gough Island:—						
dry skins	8	114—117	31—38	15—16	23—25	30—31
(Bourne)		115±1.0	34.8±2.2	15.5±.50	24.0±.5	30.3±.50
in the field	107	107—125	34—45	13—18	18—25	27—38
(Swales, 1965)		117±(3?)	38.9±2.5	15.7±.79	21.2±1.1	31.5±2.0
All skins of the *urinatrix* group:—						
Dry skins	96	108—135	31—43	14—18	23—28	28—37
(Bourne)		120±5.1	38.7±2.4	16.1±.92	25.5±1.2	31.5±1.8

Measurements here and in Table 2 include the range, mean and standard deviation in mm.; measurements of skins and spirit specimens seen roughly comparable; I am at a loss to explain discrepancies with birds measured in the field, which are presumably due to variations in measuring technique.

In addition to demonstrating the distinctness of three very similar diving-petrels in the South American area, the growing but still inadequate range of specimens available also serves to raise doubts about the status of some other subspecies of the *urinatrix* group in view both of the wide range of individual variation now becoming apparent in some populations and the possible occurrence of sympatry in closely related forms. Although it will be seen from Table 1 that all specimens of the *P. urinatrix* assemblage taken together show little more variation than Swales (1965) found in a large series of birds examined in the field on Gough Island alone, nonetheless Table 2 also shows that this variability conceals some important average differences, including especially the occurrence of two populations of different sizes in the New Zealand area. It seems difficult to decide what importance should be attached to measurements taken by several observers in the field (Bourne, 1966), but a comparison of those taken by one observer from skins and spirit specimens in Table 1 suggests that in museums at least they are consistent enough to deserve study.

(Among the named forms of *P. urinatrix* it seems doubtful whether there is justification for separating *belcheri* from *urinatrix*; *chathamensis* from *dacunhae*, or *coppingeri* from *exsul*, though if further evidence indicates sympatry, *urinatrix* with *belcheri* may require to be separated as a distinct species from the other forms, for which the specific name *P. berard* would then take priority. Other specimens seen include the head of the first bird from the South Orkneys found on the beach at Signy Id. by J. R. Beck on 12th February, 1967, which is hard to identify, but is probably *P. georgicus*.)

Table 2

Dimensions of population of *Pelecanoides*

	Number	*Wing*	*Tail*	*Culmen*	*Tarsus*	*Mid-toe*
P. garnoti						
Chile, Peru	13	135—147	35—44	19—21	32—35	33—39
		140±3.7	40.1±2.6	20.0±.75	33.4±.93	37.4±1.7
P. magellani						
Argentine, Chile,	12	120—131	39—46	15—16	26—28	32—35
Falklands		125±3.6	41.6±2.1	15.5±.50	27.3±.64	33.8±1.0
P. georgicus						
total	29	109—124	35—43	14—17	23—26	27—31
		117±3.8	39.2±1.8	15.1±.90	24.2±1.0	28.9±1.1
South Georgia	13	110—120	35—43	15—17	23—26	27—31
		116±2.9	39.1±2.1	15.3±.63	24.7±.93	28.6±1.2
Crozets	3	118—122	40—42	16—17	all 25	28—31
		120±1.2	40.7±.96	16.3±,50		29.7±1.3
Kerguelen	11	109—124	37—41	14—15	23—24	28—30
		117±4.3	39.2±1.4	14.5±.50	23.5±.50	29.1±.69
Auckland Islands	1	110	36	15	24	29
P. urinatrix						
Total	96	108—133	31—43	14—18	23—28	28—37
		120±5.1	38.7±2.4	16.1±.92	25.5±1.2	31.5±1.8
‘‘*urinatrix*’’						
New Zealand	5	129—135	38—42	16—17	26—28	31—36
(large group)		131±2.0	40.8±1.6	16.4±.50	26.4±.80	33.2±2.0
‘‘*belcheri*’’						
Australia	12	120—132	39—43	16—18	26—28	30—34
		125±3.2	41.0±1.5	16.9±.64	26.3±.64	31.1±1.4
‘‘*chathamensis*’’						
New Zealand	10	111—123	33—40	15—17	23—27	27—33
(small group)		119±3.5	37.4±1.8	15.7±.67	25.1±1.2	29.9±2.0
‘‘*dacunhae*’’						
Tristan, Gough,	19	108—118	31—40	15—16	23—25	28—31
Amsterdam		115±2.5	35.5±2.8	15.7±.50	24.0±.78	30.0±.94
‘‘*berard*’’						
Falklands	9	118—129	38—42	14—17	24—25	29—37
		124±3.7	40.7±1.3	15.4±.83	24.8±.50	32.3±2.1
‘‘*coppingeri*’’						
Chile	5	113—121	33—39	15—18	all 25	29—31
		117±2.7	37.2±2.3	16.2±1.0		29.6±.81
‘‘*exsul*’’						
Total	36	112—126	35—42	15—18	25—28	30—35
		120±3.5	39.1±1.5	16.1±.89	26.1±.87	32.4±1.8
South Georgia	13	116—124	37—40	15—18	25—27	30—33
		120±3.5	38.9±.93	16.0±.92	25.8±.93	31.5±.84
Crozets & Marion	6	112—125	35—42	15—18	25—27	31—33
		119±4.6	38.5±2.0	16.1±.96	26.3±.76	32.3±.76
Kerguelen	15	112—126	37—41	15—18	25—28	30—35
		121±3.6	39.1±1.2	16.3±.73	26.2±.82	33.3±1.5
Auckland Islands	2	122, 123	40, 42	both 16	27, 28	32, 33

The plumage characters said to distinguish different populations seem as difficult to assess as the measurements since, for example, the distinctive mottled collar of *P.* (*u.*) *exsul* is by no means invariably present and is found from time to time in lower latitude populations, as for example the type of ‘‘*P.* (*u.*) *elisabethae*’’ from Gough Island, where it certainly seems not to be usual. Swales (1965) has already commented on the value of other plumage characters such as the colour of the upper wing-coverts, where even the characteristic white flashes of *P. magellani* are not invariably specific for that species. To this natural variation must be added the fact that few museum specimens are now really in a fit state to permit refined comparisons of plumage characters while it is impossible to compare different populations directly in life.

Thus it seems possible that geographical variation in diving-petrels of the *urinatrix* group has been over-emphasised, much as in some other petrels with a circumpolar range in the Southern Ocean such as the White-faced Storm-petrel *Pelagodroma marina*, Little Shearwater *Puffinus assimilis* and Wilson's Storm-petrel *Oceanites oceanicus* (Bourne, 1953, 1959, 1964), perhaps to an extent sufficient to obscure specific relationships, as with the giant petrels of the genus *Macronectes* (Bourne and Warham, 1966). As with the giant petrels, an examination of the ecology and distribution of the birds, and especially their laying dates, may help to disentangle their affinities, and it seems likely that as with these other groups the diving-petrels may have broken down basically into groups of populations characteristic of certain circumpolar water masses. On re-examination from this point of view the following trends of variation can be distinguished in populations of, or allied to, *P. urinatrix*:—

1. Nominate *P. urinatrix* Gmelin 1789 from northern New Zealand is the largest form in the group, generally rather dark above and white below although exceptionally the breast is mottled, and tends to lay earliest, by August (Richdale, 1936). The population breeding around south-east Australia (*P. belcheri* Mathews, 1912) averages slightly smaller but is not easily separable from this form, and also apparently lays early. These birds which breed near the Subtropical Convergence appear to be adapted for the subtropical surface waters found on its northern side.

2. *P.* (*u.*) *dacunhae* Nicoll 1906 of Tristan da Cunha in contrast to the preceding is the smallest population examined and also breeds near the Subtropical Convergence, but about a month later, in September (Elliott, 1956). I agree with Swales (1965) that *P.* (*u.*) *elisabethae* Elliott, 1954 of Gough Island appears inseparable in a larger series, while one bird at Paris taken at sea off Amsterdam Island in the Indian Ocean on 11th November, 1965, where it was doubtless breeding, is similar. I am also inclined to refer birds breeding on the southern side of the Tropical Convergence in the New Zealand area off Stewart Island and on the Snares and Chatham Islands to this form as they are little larger and also breed in September (Richdale, 1936, 1945). It seems likely that this race tends to forage to the south of the Subtropical Convergence over colder sub-antarctic surface water.

3. *P.* (*u.*) *berard* Gaimard, 1823 of the Falkland Islands is long in the wing and tail like nominate *urinatrix*, but small in the bill and leg like *dacunhae*, while it lays later than either, about October (Murphy, 1936). It seems possible that it is a specialised form adapted to the cold Falkland Current. It is notable that an intermediate, late-nesting population of Giant Petrel *Macronectes giganteus* is also found in this region of water-mixing (Bourne and Warham, 1966).

4. *P.* (*u.*) *exsul* Salvin, 1896 is intermediate in size between the extreme northern forms, if anything less dark above, and is more commonly speckled on the breast. A series of rather uniform populations breeds much

at the same islands as the equally uniform white-breasted Georgian Diving-petrel *P. georgicus* in a circumpolar zone around the Antarctic Convergence, including the Antipodes and Auckland Islands, possibly Macquarie, Heard Island and Kerguelen, the Crozets and Marion Island, and as reported here, South Georgia, both of them laying fairly close together in November and December, *P. georgicus* possibly averaging a little later though there is much overlap. Several white-breasted birds taken at sea off southern South America have been described as a distinct race *P.* (*u.*) *coppingeri*, but they are close to *exsul* in size and may perhaps best be referred to that form, though their breeding place and season is still unknown. The precise zonal surface water preferences of *P.* (*u.*) *exsul* and *P. georgicus* also still require to be worked out; they might feed on opposite sides of the Antarctic Convergence, *P. georgicus*, if it really nests later, presumably to the south over colder antarctic water because it is not found further north while *P.* (*u.*) *exsul* is, but this is merely speculation, and there may be other ecological differences between them at sea as there are at the breeding stations (Downes, *et al.*, 1959).

If this analysis is correct, the *urinatrix* group of diving-petrels can be broken down into three representatives feeding over distinct subtropical, subantarctic and possibly (?) antarctic zones of surface water in the Southern Ocean, with an intermediate population in a region of water-mixing around the Falkland Islands, in much the same way that the other three species in the family can be arranged in a sequence of three zonal representatives south down the west coast of South America from subtropical *P. garnoti* through subantarctic *P. magellani* to *P. georgicus* with a circumpolar range at the Antarctic Convergence overlapping that of *P.* (*u.*) *exsul*, (Figure 1). It is tempting to speculate that the ancestors of the "*urinatrix*" and "*garnoti*" radiations developed in cold-current refugia off western South

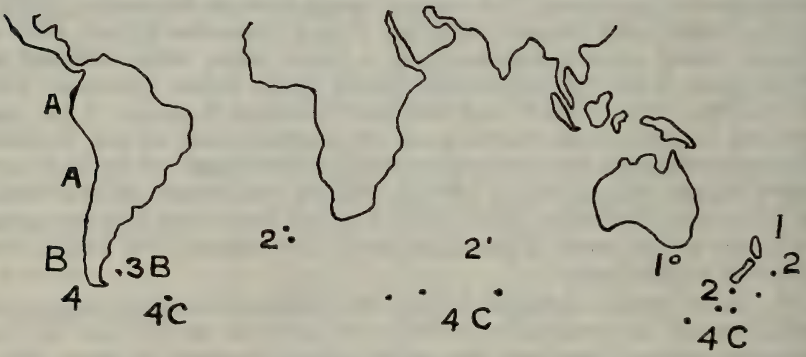

Fig. 1. Distribution of forms of *Pelecanoides*

Letters: members of the "garnoti" series. A, subtropical *P. garnoti*; B, subantarctic *P. magellani*; C, antarctic *P. georgicus*. These possibly have a comparatively coastal distribution?

Numbers: members of the "urinatrix" series, 1, subtropical nominate *P. urinatrix* (including the form *belcheri* of S.E. Australia); 2, low subantarctic *P.* (*u.* or *b*?) *dacunhae* (including the form *chathamensis* of New Zealand?); 3, intermediate *P.* (*u.* or *b.?*) *berard* of the Falkland Current; 4, high subantarctic *P.* (*u.* or *b*?) *exsul* (including the form *coppingeri* of waters off South America?)

America and in the New Zealand and east Australian regions during some past glaciation (probably long ago, as the family is highly distinct and probably old), and that the types developed there subsequently moved south again when the climate improved, leaving derivatives behind in the refugia and also giving rise to others with an overlapping distribution in the southern ocean to produce the situation found today. The forms derived from *P. garnoti* have clearly developed further along this path than those belonging to the "*urinatrix*" group, possibly because the contrasting conditions they encountered were more extreme, and nobody in recent years appears to have questioned that they should be regarded as well-defined species. The same trend towards the development of zonal representatives appears to have proceeded rather less far in the "*urinatrix*" group as well, and the situation here is of some interest.

In the past the main question with regard to the classification of the "*urinatrix*" group of diving-petrels has been the status of *P.* (*u.*) *exsul*, treated by Murphy and Harper (1921) as a distinct species allied to *P. georgicus* on the one hand and *P. urinatrix* on the other. There is now no doubt that it is distinct from P. *georgicus* since they breed together with a distinct ecology at a number of stations, *P.* (*u.*) *exsul* tending to burrow in vegetation on coastal slopes and *P. georgicus* in flat, open places often at considerable altitudes inland, for example (Downes *et al.*, 1959; van Zinderen Bakker, 1967). On the other hand it appears that *P.* (*u.*) *berard* shows intermediate characters between *P.* (*u.*) *exsul* in the south and the populations of *P.* (*u.*) *dacunhae* further north, and these birds apparently behave similarly while there seems no question of sympatry here, so these three forms can presumably be considered conspecific. The situation becomes more complex again where small *P.* (*u.*) *dacunhae* meets large nominate *P. urinatrix* in the New Zealand area.

The limited series of birds available from the New Zealand region fall into two clear groups separated by a wide gap in size, including large birds presumably referable to nominate *P. urinatrix* from the north and small ones resembling *P.* (*u.*) *dacunhae* usually referred to a distinct race *P.* (*u.*) *chathamensis* from the south. However, the three birds I have seen from the Chatham Islands on the Subtropical Convergence include two of the small form at Cambridge and one large female taken by Hawkins with a wing of 133 mm. at Paris, while the subfossil humeri from the island show an equally large range of variation in size (Bourne, 1967). It is generally reported that it is the small form which breeds here; the large bird may be a stray, or wrongly labelled, but if not, it seems possible that both the small and large forms from New Zealand may breed together in the Chatham Islands, in which case, like the two populations of Giant Petrel *Macronectes giganteus* and *M. halli* breeding together on the Antarctic Convergence at Macquarie Island (Bourne and Warham 1966), they will have to be treated as sympatric sibling species presumably adapted to exploit the two different types of surface water that meet in the area at the Convergence.

This situation presents a difficult taxonomic problem, since it is the isolated subtropical form breeding around northern New Zealand whose name has had priority for the whole *urinatrix* group. In recent times all its members have normally been treated as races of *P. urinatrix* whereas the members of the *garnoti* group have usually been treated binomially, In their recent *A field guide to the birds of New Zealand* Falla *et al.* (1966), have gone on to treat all the local forms of *Pelecanoides* binomially among a good many other debatable taxonomic innovations. Personally I feel that either alternative could be regarded as acceptable until more information becomes available from the field, where there is clearly a need for more comparative studies of these elusive birds. Meanwhile it may be pointed out that there is a marked discontinuity in the normal trend of variation in the members of the "*urinatrix*" series of populations, in that the presence of a large form in the north conflicts with Bergmann's Rule that animals commonly become larger in the cooler parts of their range. This surely suggests a comparable genetic discontinuity in the New Zealand region associated with ecological adaptations for different zones of surface water and quite likely to be allied with occasional sympatry of the dissimilar populations where their habitats meet at the Convergence between the water masses, as at the Chatham Islands, so that it is entirely possible that it may eventually be found necessary to treat the New Zealand forms of the "*urinatrix*" group of diving-petrels as specifically distinct.

If the New Zealand diving-petrels should come to be separated specifically, *P. urinatrix* is probably best treated as a monotypic subtropical species characteristic of northern New Zealand and south-east Australia while the remaining forms, which are linked by an intermediate population and vary in conformity with Bergmann's Rule, becoming larger from north to south, are perhaps best treated as a second polytypic species characteristic of the subantarctic zone, *P. berard*, with three races, small *P. b. dacunhae* with a circumpolar range at islands near the Subtropical Convergence, nominate *P. b. berard* occupying an intermediate position in an area of water mixing around the Falkland Islands, and *P. b. exsul* breeding at islands along the Antarctic Convergence. The whole series may be regarded as a less highly developed counterpart originating in the New Zealand area of the sequence formed by the species *P. garnoti*, *P. magellani* and *P. georgicus* southward in successive climatic zones down the west coast of South America and the Scotia Arc, with the terminal forms of both series overlapping and developing a circumpolar distribution along the Antarctic Convergence of the Southern Ocean.

SUMMARY

Pelecanoides (*urinatrix*) *exsul* has now been found breeding alongside *P. georgicus* in South Georgia, and a specimen, probably of the latter species, found at Signy Island in the South Orkneys. *P. magellani* has also been collected several times in the Falklands, where it may also breed alongside *P.* (*u.*) *berard.* A specimen of the large nominate form of *P. urinatrix* has also been traced from the Chatham Islands, where the small subantarctic form *P.* (*u.*) *chathamensis* (probably identical with *P.* (*u.*) *dacunhae*) is known to breed; if it also breeds there, it seems likely that the "urinatrix" assemblage of diving-petrels will have to be divided into two distinct species, subtropical *P. urinatrix* and subantarctic *P. berard* in addition to currently recognised divisions.

ACKNOWLEDGMENTS

The diving-petrels were first explained to me by Dr. R. A. Falla. Dr. W. L. N. Tickell has also provided important information about the situation he discovered in South Georgia, and Mr. M. Carins about that elsewhere in South America. I am grateful to the staff of the Bird Room at the British Museum (Natural History) for assistance and forebearance in the examination of some very smelly specimens. Dr. D. L. Serventy read a draft of this paper.

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A case of virilism in a female Silver Pheasant

by JAMES HARRISON

Received 8th March, 1968

A hen Silver-Pheasant, *Lophura nycthemera* (Linnaeus) which was hatched in the spring of 1962, and which, although in full and normal plumage of the female at the time, was seen displaying vigorously in the spring of 1964.

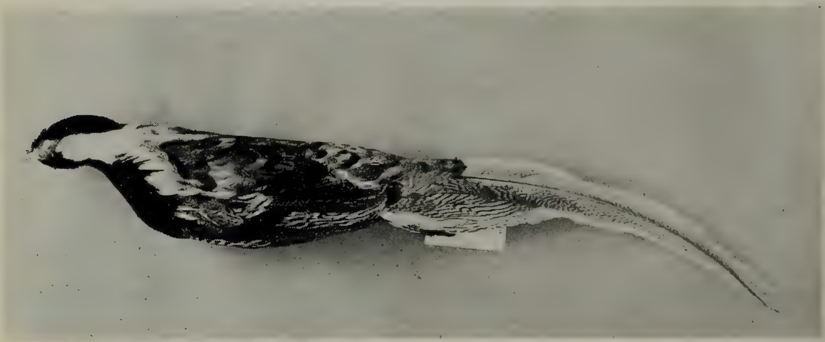
The display in the male of this species is characterised by the assumption of a very erect posture with the head and neck fully extended and with the wings spread and vibrating rapidly, and the character of the display shown by this individual differed in no way from that of the male. This was the first and only time when the bird was seen displaying nor was there any apparent reason for this behaviour.

On the occasion of any excitement, *e.g.* the presence of a cat or dog, will not infrequently provoke a display in the male.

A year later, on 6th April, 1965, the presence of male plumage characters was first noted, some black feathers appearing in the front of the neck and on the breast, and these changes progressed steadily during the rest of the spring moult and from then onwards became more and more marked, indicating that the masculinising factor was operative beyond the normal duration of the moult.

On 28th November of that year the bird first showed signs of ill-health, developing wing-droop, and appearing generally in poor condition, shortly afterwards it was seen to be limping. Some improvement was obtained by giving injections of vitamin B, when it was noted that the bird had obviously lost weight, despite the fact that it had been feeding quite well. It soon became apparent that survival was impossible, and it was, in fact, found moribund on the morning of 13th January, 1966, dying shortly afterwards.

The degree of disturbance of the secondary sexual characters which took place between the male display in April, 1964, when the plumage was that of a normal female, to the time of its death in January, 1966, can be seen in the plate (Fig. I). This shows an advanced stage of masculinisation, rather more than seen in many cases of sexual mosaicism.



Photograph by Dr. Pamela Harrison.

Fig. I.: *Lophura nycthemera* (L.) Intersex, anatomically ♀, adult, showing marked degree of male plumage.

The profound effects here in this specimen postulate a very powerful androgenising agent.

Gross morbid anatomy

The cadaver showed an extreme degree of emaciation, and in addition the presence of numerous yellowish nodules.

The main lesion, located in the right pectoral region, measured 70 mm. from its upper to the lower pole, and approximately 35 mm. across. This lesion also embraced the pectoral girdle.

Anteriorly there were two more nodules, one about half the size of the largest, situated in the pectoral muscles opposite the left knee-joint, with a smaller one just below it. The only other nodule on the ventral surface of the body was situated in the musculature of the right thigh; this measured 14 x 9 x 6 mm.

On reflecting the sternum, two plaques were found on the inner surface of the thoracic wall on a level with the heart, which with its pericardium appeared uninvolved.

Surprisingly enough there was no gross evidence that either adrenal was affected, but an obviously atrophic ovary was found, with an oviduct of a size indicating that the bird had laid eggs. This assumption is supported by observations during life, for this bird was in an enclosure with the cock and another hen, and the fact that most days an egg was gathered is clear evidence that both hens were laying.

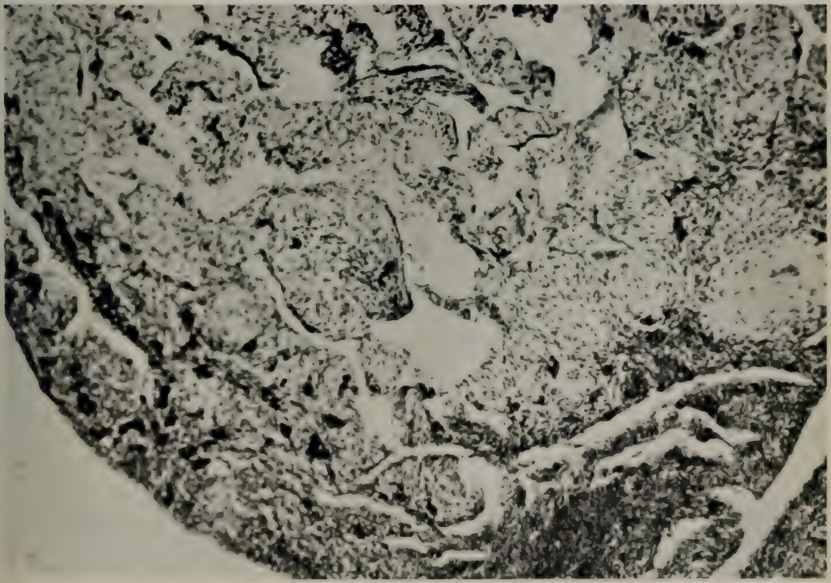
Another curious finding was that of the virtual absence of the lower third of the right kidney, although a very small piece of the extreme lower pole is visible. In the writer's opinion this anatomical defect is by nature congenital.

Microscopic anatomy

Sections were cut through the atrophic ovary and from a small part of the main nodule, and the prepared slides were stained with haematoxylin and eosin, the basic histological staining method.

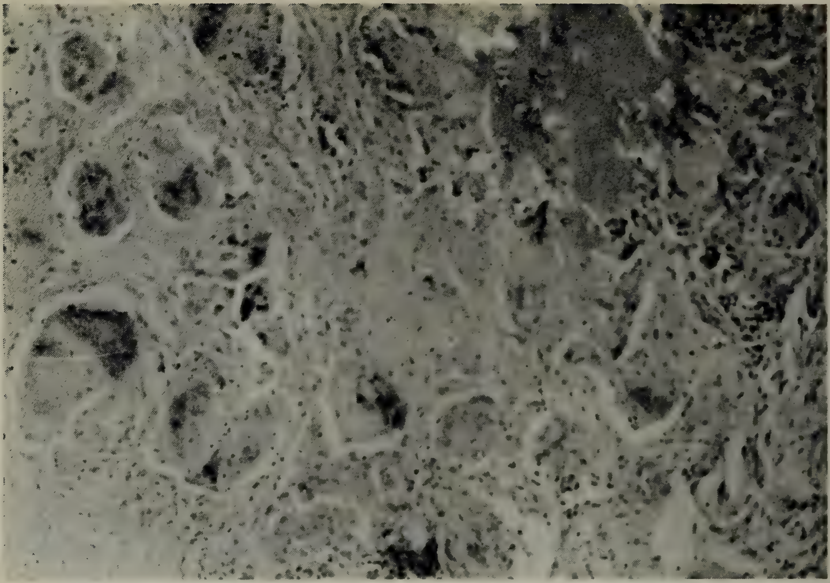
The slide of the ovary shows many degenerated cells which have failed to take up the eosin of the stain, and there are areas which lack any cell definition at all; these are in consequence almost uniform in character. Added to this picture of ovarian atrophy there is present much blackish amorphous pigment, which, in my experience is almost always found in cases of ovarian degeneration.

However, the most striking feature of the section is the invasion of the



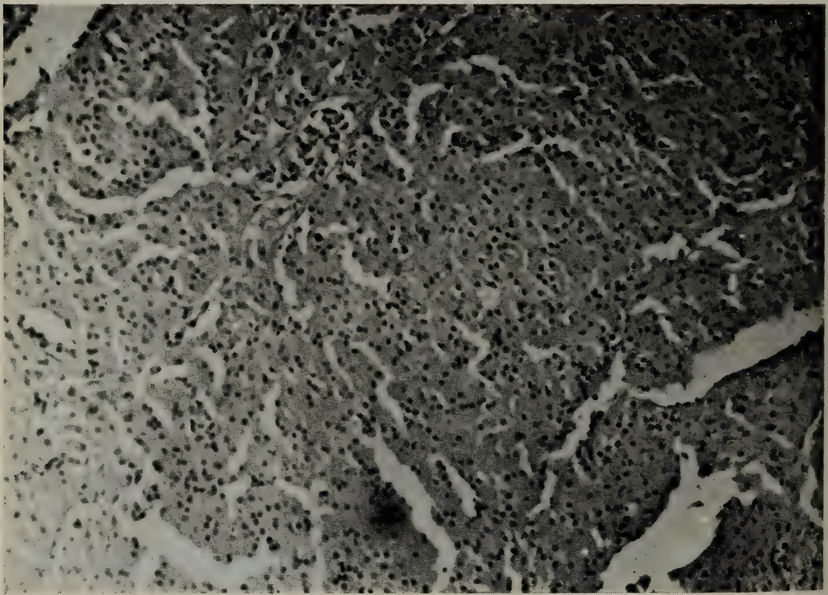
Photomicrograph by Dr. P. W. Derby.

Fig. II.: Ovary: Showing degenerated ovarian stroma and debris, and the invasion of the atrophied organ by adreneal cortical cells stained H. and E. (× approx. 40).



Photomicrograph by Dr. P. W. Derby.

Fig. III.: Multinucleate tuberculoid granuloma (from main lesion) Stained H. and E. (× approx. 150).



Photomicrograph by Dr. P. W. Derby.

Fig. IV.: Another field of the same lesion showing an area of cells resembling cortical adrenal cells, but no giant cell systems. Stained H. and E. (× approx. 150).

ovarian stroma by what are almost certainly adrenal cortical cells, which would undoubtedly account for the strong androgenic characterisation shown by this specimen. (Fig. II).

The section of a part of the main nodule has presented certain anomalous features and I have sought the opinion of Dr. Keith Randall, who comments as follows: "The second section which was thought to be metastatic deposit seems to me to show a curious foreign body type of granulomatous lesion with many tuberculoid type giant cells, some with peripheral and some with central nuclei. I do not think there is any question of tuberculosis here, but at the same time I don't think this is any sort of tumour," (Figs. III and IV).

Discussion

This case represents an example of one of the less common causes of intersexuality in birds. It would seem that the intersexual state was not brought about by any single factor, and it is difficult to decide just what initiated the change.

One usual cause for the assumption of maleness in female birds can be ruled out, *viz.* that of senility, for this bird is not of such an age, and the majority of birds developing intersexuality as a result of old age are, in the writer's experience, at least twice the age of this example.

Then we have the factor of ill-health which was observed to progress over a not inconsiderable period since this bird, for most of the time it was under observation was left with the two other birds, which did not suffer in any way, which strongly suggests that there was no question of any communicable disease.

The other notable characteristic was the relatively rapid emaciation with the presence of widespread peripheral lesions. The assumption can be safely accepted that this was no acute episode but some cold and almost chronic illness, and the dissemination of the lesions adds to this somewhat puzzling clinical-pathological picture.

Probably the earliest reference to the maculinisation of female birds, due to extragonadal influences, is to be found in the paper by J. P. McGowan (1936) in which the suggestion is made and is fully discussed, as to the effects of extra-gonadal androgen secreted by the adrenal glands, a theory the substantiation of which has since been fully accepted.

A circumstance which fully supports this view is, of course, that these cases of ovarian agenesis in which very marked maleness is assumed by females of the species, in which ovulation had naturally never occurred, and in which also there was no question of the development of a right-sided compensatory ovo-testis, and in which, in the present state of our knowledge, there would be no other source of androgenic hormone.

Added to the hormone influence in such cases one must bear in mind that there may well co-exist genetic factors in the determination of maleness. Concerning this latter mechanism in female birds, we can be less certain in the present state of our knowledge, as there is no doubt that the determination of sex genetically is quite variable within the various species.

This case has presented some very puzzling features, for at the onset of the events leading up to the changes in the secondary sexual characters as described herein, the appearances of the bird at that time were entirely those of a normal hen. The sequence of events could, at that time up to the end of November, reasonably have been ascribed to the onset of ovarian atrophy with presumably the development of a compensatory right-sided gonad.

Subsequent events however, caused one to think that the problem was actually not as simple and straightforward as this.

The onset of symptoms of progressive ill-health, lasting a matter of six weeks and four days in its terminal phase confirmed that some other factor than that of a simple failure of ovarian function and its consequences was operative.

The gross morbid anatomy has already been described and the microscopy has confirmed the state of ovarian atrophy with invasion of the degenerated ovarian stroma with adrenal cortical cells, but has added a further puzzle in that an examination of the sections of the main lesion presented the characters, as determined by Dr. Keith Randall, as a ''multinucleate tuberculoid granuloma.'' This type of reaction is associated with the presence of a foreign body, although such was not found at autopsy, or possibly some infection that must now remain unidentified. One is left cogitating therefore as to whether the two striking features, *viz.* the pronounced masculinisation shown by this bird and its severe and fatal wasting illness, in this case were in effect quite unconnected and their co-existence entirely fortuitous.

SUMMARY

A case of intersexuality, believed to be due to supra-renal virilism, in a female Silver Pheasant is described and some aspects of this condition in birds is discussed in this context.

The histopathology presented certain unusual features.

ACKNOWLEDGMENTS

I am greatly indebted to Drs. Keith Randall and P. W. Derby, Pathologists, and to their technical staffs at Orpington and Sevenoaks Hospital for the preparation of the histological material and especially to Dr. Randall for his opinion on the slides, and to Dr. Derby for the photomicrographs herein reproduced.

To Dr. Jeffery Harrison I am, as usual, indebted for much useful discussion and comment on this and similar cases, and to Dr. Pamela Harrison for the photograph showing this remarkable specimen.

Reference:

McGowan, J. P., 1936. Supra-renal ''virilism'' in a Domestic Hen, its possible significance. *Quarterly Journal of Microscopical Science*. XIII, 4: 377–382.

A probable intrageneric hybrid pewee (Tyrannidae: *Contopus*) from México

by Allan R. Phillips and Lester L. Short, Jr.

Received 22nd February, 1968

A peculiar male tyrant flycatcher (''pewee'') specimen obtained by W. B. Richardson on 11th May, 1897 at San Andrés, near San Cristóbal de Las Casas, Chiapas, was recently found by the senior author in a tray of

Contopus musicus (Swainson) (also called *C. pertinax* Cabanis and Heine, addendum below) at the British Museum (Natural History). This specimen (British Museum number 99.4.20.2030, Salvin and Godman collection) was at once determined to be too small and too short-winged for C. *musicus*, as well as slightly ''off-colour'' for that species. Superficially, it appears to be a pewee the size and shape of *Contopus sordidulus* Sclater, but the colour of *C. musicus*. Data for this specimen are compared in table 1 with data from comparably plumaged specimens of *C. m. musicus* and *C. s. sordidulus*, the races of these two pewees that supposedly breed in Chiapas. We are aware that there is a possibility that this bird was a migrant, as the migration of *C. sordidulus* extends well into June (Phillips, Marshall and Monson, 1964, p. 91). Those unfamiliar with the Tyrannidae might indeed wonder how a strange specimen, possibly a migrant, can with confidence be placed within a genus of this difficult family. Fortunately, the extreme pointed and relatively long wings of *Contopus* (including *Nuttallornis* Ridgway) are distinctive, as is also the peculiar olive-grey and oleaginous ventral coloration of *C. musicus*. The fact that the latter breeds nowhere sympatrically with *C. virens* (Linné) simplifies the problem further and *C. mesoleucus* (W. Deppe) [= ''*Nuttallornis*'' *borealis* (Swainson)] is too large to be one of the parents. Thus, granting the hybridity of the specimen, the parental species are *C. musicus* and *C. sordidulus*. From the measurements, it is clear that the specimen resembles *C. sordidulus* in size and shape, except for its longer wings (longer, indeed, than the wings of any *C. sordidulus* or *C. virens* specimens we have ever examined) and longer tail (a few western North American *C. sordidulus* have tails attaining a length of 71 mm.

Table 1

Measurement in millimetres of *Contopus s. sordidulus*, *Contopus musicus* and hybrid*

Character	*sordidulus*	*hybrid*	*musicus*
Wing Length (chord)	78.5 — 87.4	92.2	101 — 113
Tail Length	58.3 — 64.2	70.6	80.5 — 92.2
Bill Length (from nostril)	9.3 — 10.7	9.3	12.3 — 15.9
Bill Width (at nostril)	5.9 — 6.7	6.5	7.3 — 9.6
Tarsus	12.4 — 13.4	13.5	16.3 — 19.0
Hind Toe + Claw	8.8 — 9.5	9.5	12.4 — 13.5
Largest Primary Less P.6	11.7 — 15.4	13.1	7.5 — 10.9
Tail: Wing Ratio	0.69 — 0.76	0.77	0.80 — 0.86
$\frac{\text{Tarsus}}{\text{Wing Less Tail}}$	0.55 — 0.64	0.63	0.80 — 1.21
Tail Clear †	24.5 — 33.5	25.8	43.5 — 54.0

*Comparably plumaged males of *C. s. soridulus* (N = 15), and males of *C. m. musicus* (N = 10) were used for those characters in which wear is a factor. Additional males of *C. s. sordidulus*, and *C. m. musicus* and *C.* m. *pallidiventris* were also used for other characters.

†This is the measurement of the distance between the tip of the tail and the longest under tail-covert.

It is in various colour characters that the intermediacy and strong *musicus* influence of the specimen are evident. The following notes are largely based on a comparison of the specimen with comparably plumaged male specimens of *C. m. musicus* (N = 12), *C. m. pallidiventris* (N = 10) and *C. sordidulus sordidulus* (N = 10), although additional specimens of these and other forms of *C. sordidulus* were considered for temporal and other variation.

Ventral Coloration.—In the totality of its ventral coloration the specimen closely approaches the range of variation of *C. musicus*, and is well outside that of *C. sordidulus*. Its throat is paler than that of most *C. musicus* but not as white as that of any *C. sordidulus*, while its breast is olive-grey with conspicuous yellowish, like *musicus*, not the clearer or slightly brownish grey of *sordidulus*. Posteriorly, the putative hybrid resembles *C. musicus pallidiventris;* that is, its abdomen is intermediate in colour between that of the yellowish, buffy-olive of *C. musicus* and the much paler (whitish) abdomen of *C. sordidulus*. Its under tail-coverts lack the ochre-buff of *musicus*, matching the white-edged feathering of that region in *sordidulus*. Thus, only in the colour of the under tail-coverts and the abdomen does the ventral coloration of this specimen differ from *C. m. musicus*.

Dorsal Coloration.—As in its ventral coloration, the colour of the dorsum in the presumed hybrid is nearest that of *C. musicus*. Only in its upper tail-coverts is there an approach to *C. sordidulus*, in that they are greyer and less green than those of *C. musicus*. Otherwise, the upper-parts of this specimen are olive-grey, more greenish and less brown than in *C. sordidulus*, and as in *C. musicus*.

Wing Coloration.—The wing bars and edges of the tertial feathers are clear whitish in this specimen, rather than duskier with duller white edges as in *C. musicus*. The under side of the bend of its wings appears nearest *sordidulus;* the feathers are greyish, with some of the buffy-ochre that broadly edges these coverts, as well as the axillar feathers of *musicus*, and only narrowly edges the same feathers of *sordidulus*.

Shape of the Wings.—The 10th primary of the bird in question is longer (by 5.1 mm.) than the 6th primary, as in *C. sordidulus* (in which P 10 averages 4.0 mm. greater than P 6). In *C. musicus* P 10 is shorter (by an average of 3.5 mm.) than P 6.

Colour of Lower Mandible.—Although probably subject to post-mortem colour changes, the specimen's bill is dusky, as in *C. sordidulus* and not pale yellowish as in old specimens of *C. musicus*.

Rictal Bristles.—C. m. musicus has long rictal bristles that can be appressed forward to cause them to extend beyond the nostrils. Those of *C. s. sordidulus* and the hybrid can be extended only as far as the nostrils.

Crest Shape.—The crest of *C. musicus* is composed of elongate, narrow feathers, while that of *C. sordidulus* has much shorter feathers of normal width throughout. The putative hybrid has crest feathers only slightly longer than those of *C. sordidulus*, but they are distinctly narrowed toward their tips. This apparently represents a tendency toward the condition found in *C. musicus*.

We conclude that this specimen exceeds the extreme range of variation of *C. sordidulus*, so that it cannot be considered a variant of that species. The specimen's tendencies toward *C. musicus*, including strong colour resemblances and a few mensural tendencies, can best be accounted for by regarding it as a hybrid product of a cross between individuals of *C. musicus* and *C. sordidulus*.

The occurrence of this cross bears out a prediction the junior author (*in* Short and Burleigh, 1965) has previously made concerning the likelihood of intrageneric hybridization within *Contopus*. Of interest is the difference in size between *C. musicus* and *C. sordidulus*. This is but weakly reflected in wing length, because of the relatively long, pointed wings of the highly migratory *C. sordidulus*. Weights present a better picture of their difference in size. In Nayarit, whence we have the most saitisfactory data on weight of the forms in question, three males of *sordidulus* weighed 13.3 to 13.8 gm. (average 13.6 gm.) and two females weighed 11.9 and 12.0 gm.; against these, three males of *musicus* weighed 26.9 to 28.2 gm. (average 27.6 gm.), and three females weighed 24.2 to 25.3 gm. (average 24.8 gm.). Weights of these species elsewhere are close to these: three other *musicus* vary from 25.3 to 28.3 gm., and 20 *sordidulus* (including some larger specimens from the western United States) weighed 11.5 to 15.5 gm. Thus, *C. musicus* weighs about twice as much as the smaller species, besides differing rather markedly in its longer crest, orangish mandible, and its peculiarly coloured underparts. Indeed the superficial differences between the parental species in colour and size are greater in this case than in the intergeneric hybrid reported by Short and Burleigh (*op. cit.*).

We express our gratitude to the authorities of the British Museum (Natural History) for the opportunity to study and compare this specimen at leisure, and to the Frank M. Chapman Memorial Committee for helping to support Phillips' research in London.

Addendum by Phillips: As a name for *C. pertinax auct.*, *Tyrannula musica* Swainson has many years' priority. The latter name has been adopted by Phillips (MS; and in Phillips, Marshall and Monson, *op. cit.*) because both the description and the name itself apply so clearly to this species. In 1966 Phillips was enabled to re-discover Swainson's type in the Cambridge University Museum, through the courtesy of C. W. Benson. Like all of Swainson's types, this one had not been so marked by early ornithologists, and in fact it had been overlooked by all except Salvin and Godman (1889), who unfortunately failed to mention its presence in the Cambridge University Museum collection. I am unable to account for Hellmayr's (in Cory and Hellmayr, 1927) inability to recognize Swainson's descriptions of both *T. musica* and *T. pusilla* (see Swainson, 1827; and Swainson and Richardson, 1831).

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Seafowl observed on a voyage, Cape Town to Southampton, 24th January to 5th February, 1968

by H. A. BRITTON AND P. L. BRITTON

Received 2nd March, 1968

The format of this paper follows Pitman (*Bull. B.O.C.* 87 (7), October, 1967) very closely, as that paper described the birds seen on a similar voyage from Cape Town to London in January-February 1967. Las Palmas, Gran Canaria, the sole port of call, was visited in darkness at 2200 hrs. on 1st February. Our arrival at Southampton also took place in darkness at 0600 hrs. on 5th February and no mention is made of any birds seen in the harbour subsequent to our arrival. All times given are local.

It was not the season for land migrants and the only land birds encountered were two ringed feral pigeons which came aboard at 1615 hrs. on 1st February when the ship was about 20 miles off Gran Canaria; one of these birds remained with the ship until 1000 hrs. the next day. Seafowl were sparse but for the evening of 24th January (until sunset) and the following morning (from 0550 to 0930 hrs.), when in Cape seas, and on the afternoon of 30th January (from 1145 to 1800 hrs.) when off the coast of Sierra Leone. No birds were recorded on 27th January (13° 32′ S, 00° 38′ E.) and 29th January (00° 53′ N, 10° 28′ W.), and both 28th January (06° 08′ S, 04° 53′ W.) and 2nd February (31° 22′ N., 14° 19′ W.) produced only one entry. The ship's recorded position is at noon.

Following Pitman, species are listed in the order in which they were first encountered. The ship left Cape Town harbour at 1600 hrs. on 24th January on bearing 323° true.

HARTLAUB'S GULL, *Larus hartlaubii.* Of hundreds in Cape Town harbour only one followed the ship into open water. This bird followed with the next species until *c.* 1730 hrs.

SOUTHERN BLACK-BACKED GULL, *Larus dominicanus.* Hundreds, mostly adults, in Cape Town harbour; only one non-adult followed the ship with *c.* 90 adults. About 60 were still following at 1700 hrs., *c.* 20 at sunset and one or two thereafter until 2015 hrs.

CAPE CORMORANT, *Phalacrocorax capensis.* Dozens in Cape Town harbour. On 24th January, six flew west over the wake at 1700 hrs. and an immature bird flew over the ship at 1835 hrs.

COMMON/ARCTIC/ROSEATE TERN, *Sterna hirundo/macrura/ dougallii.* Probably hundreds, both adults and immatures, in Cape Town harbour. On 24th January, three passed the ship at 1650 hrs. and *c.* 15 were seen at 1840 hrs.

CAPE GANNET, *Sula capensis.* On 24th January, single adults at 1615 hrs. and 1715 hrs.; several groups of up to six adults between 1720 and 1750 hrs.; hundreds, adults and some sub-adults, between 1800 hrs. and sunset. On 25th January, an adult at 0550 hrs.

BLACK-BROWED ALBATROSS, *Diomedea melanophris.* On 24th January, a non-adult flew alongside the ship at 1800 hrs.; two, an adult and a sub-adult, at 1950 hrs. On 25th January, three, at least one of them adult, at 0645 hrs.; an adult at 1715 hrs.; single sub-adults at 0900 hrs. and 0925 hrs. None were following.

CAPE HEN, *Procellaria aequinoctialis.* On 24th January, one at 1715 hrs three at 1845 hrs. and one at 1945 hrs.; all were flying over the wake though only one settled to inspect it.

GREAT-WINGED PETREL, *Pterodroma macroptera*. On 24th January, at least 30 about the ship between 1810 and 1825 hrs. and three at 1950 hrs. On 25th January, three at 0900 hrs. two at 0920 hrs. and singles at 1600 hrs. and 1625 hrs. On 26th January, two flew south at 1130 hrs.

WANDERING ALBATROSS, *Diomedea exulans*. On 24th January, a non-adult over the wake, settling briefly, at 1825 hrs. and a sub-adult at 2000 hrs. On 25th January, two non-adults following briefly from 0550 to 0600 hrs.

ANTARCTIC SKUA, *Catharacta skua antarctica*. One about the ship from 1900 to 2000 hrs. on 24th January had frequent skirmishes with *Larus dominicanus*. At least two at 0630 hrs. and another, different bird at 0900 hrs., on 25th January.

GREAT GREY SHEARWATER, *Adamastor cinereus*. One flew over the wake at 0550 hrs. on 25th January.

CORY'S SHEARWATER, *Procellaria diomedea*. On 25th January, birds about the ship continuously from 0600 to 0800 hrs.; another *c*. 30 between 0900 and 0925 hrs. and a single bird at 1145 hrs. On 30th January, four with a flock of phalaropes at 1145 hrs. and one circling by the wake at 1250 hrs. On 31st January, a flock of about 40 birds, and other smaller parties totalling another 20, at 1640 hrs.; another six at 1705 hrs.

POMARINE SKUA. *Stercorarius pomarinus*. One by the ship at 1610 hrs. on 25th January and a total of at least 15 seen between 1245 and 1800 hrs. on 30th January. At least this number was involved, as most were seen flying strongly towards the ship, often from half a mile distant. None followed the ship for any length of time, though two settled to examine the wake. All birds were light phase adults.

SOOTY SHEARWATER, *Procellaria grisea*. On 25th January, singles at 0745 hrs. and 0800 hrs. and two at 0900 hrs.; all were flying with *P. diomedea*.

WILSON'S PETREL, *Oceanites oceanicus*. On 25th January, two at 1015 hrs., four at 1040 hrs., one at 1050 hrs. and one at 1120 hrs. All passed southerly, close to the ship, lingering and occasionally settling on the water. None followed or showed any interest in the wake. Single birds came on board on the nights of 25th January and 28th January.

PETREL spp. A small dark petrel flew south at 1050 hrs. on 30th January. A small petrel low over the wake at 0925 hrs. and a small dark petrel over the wake at 1040 hrs., on 31st January. A large dark petrel with white rump at 1050 hrs. on 1st February was probably *Oceanodroma castro/leucorhoa*.

PHALAROPE sp. On 30th January, a flock of at least 200 birds flying in a tight flock and occasionally settling, at 1145 hrs.; a single bird at 1440 hrs. On 1st February, several small flocks totalling about 60 birds flying and settling near the ship at 1050 hrs.

ARCTIC SKUA, *Stercorarius parasiticus*. A dark immature at 1145 hrs. and a dark adult at 1430 hrs. on 30th January.

KITTIWAKE, *Rissa tridactyla*. Single immature followed briefly at 1505 hrs. on 30th January and 0925 hrs. on 31st January. On 1st February, two immatures flew south at 1050 hrs. and about a dozen immatures with an adult followed briefly at 1550 hrs. On 3rd February, an adult at 0820 hrs., four adults with an immature at 0830 hrs. and an adult at 1015 hrs. On 4th February, two sub-adults from 0840 to 0850 hrs., an adult at 1045 hrs. and four adults or sub-adults from 1310 to 1330 hrs.; all following.

LITTLE SHEARWATER, *Puffinus assimilis*. On 30th January, three individuals flew south close to the ship between 1620 and 1630 hrs.; flapping with little gliding.

LESSER BLACK-BACKED GULL, *Larus fuscus*. About 40 birds, mostly adults, transferred from an outgoing vessel at 1630 hrs. on 1st February when we were approaching Gran Canaria (first sighted at 1725 hrs.) and some 70 miles from port. Most of these, and certainly some recruits followed until dusk (at 1850 hrs.) when observations ceased. On 4th February, an adult (far darker than Gran Canaria birds) followed with two Kittiwakes at 0840 hrs.; two paler adults followed at 1325 hrs.

GREAT SKUA. *Catharacta skua skua*. One followed briefly at 1600 hrs. on 2nd February.

HERRING GULL, *Larus argentatus*. An adult and a sub-adult followed briefly at 1045 hrs. on 4th February.

GANNET, *Sula bassana*. On 4th February, two adults flew south at 10.40 hrs. and several adults with a few first year birds were seen in rough seas between 1130 and 1330 hrs.

Observations ceased at 1330 hrs. on 4th February because of bad weather.

6 MAY 1968

CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov., sp. nov., subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

Proofs must be returned without delay. No changes may be made at this stage, other than corrections. At the discretion of the Editor, the Club will pay for a reasonable number of monochrome blocks, which the contributor may retain for his own use.

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CORRESPONDENCE

Other correspondence should be addressed to the Hon. Secretary, Mr. Martin W. Woodcock, 34 Hill Road, Theydon Bois, Essex.

DINNERS AND MEETINGS FOR 1968

NO MEETING IN MAY, 17th September, October jointly with B.O.U., 19th November, 17th December.

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Edited by
JOHN J. YEALLAND

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OCTOBER MEETING

A meeting will be held at the Rembrandt Hotel, on Tuesday, 15th October. The usual dinner will be followed by a symposium to discuss the future and policy of the Club and the *Bulletin*. Details will be circulated with the October *Bulletin*.

Annual General Meeting

The Seventy-Sixth Annual General Meeting of the British Ornithologists Club was held at the Rembrandt Hotel, London, at 6.30 p.m. on Tuesday, 16th April, 1968, with Mr. R. S. R. Fitter in the Chair.

The Minutes of the last Annual General Meeting were read, approved and signed.

The Accounts for 1967 were discussed. It was pointed out that there was a misprint in Income and Expenditure Account, the excess of expenditure over income carried down being overstated by three pence. The question of overdue subscriptions was raised, and the Treasurer undertook to make further efforts to bring Members in arrears up-to-date.

The adoption of the Accounts was proposed by Dr. J. Monk, and seconded by Sir Thomas Barlow.

Two vacancies on the Committee required to be filled as a result of the retirement of Messrs. M. L. R. Romer and C. J. O. Harrison.

Mr. Philip Wayre and Mrs. Diana Bradley had been approached by the Committee, and had agreed to stand for election.

These nominations were proposed by Mr. D. Calder and seconded by Sir Thomas Barlow, and it was agreed that from now on only the senior member of the Committee would retire annually.

The Chairman pointed out that by an unfortunate oversight, no nominations had been made in the Notice calling the Meeting to fill vacancies arising under Rule (1) for the office of Chairman and Vice-Chairman. After some discussion, it was proposed by Mr. D. Calder, and seconded by Sir Thomas Barlow, that these nominations should be proposed from the floor. It was further proposed that the elections having been made, these proceedings should be minuted, and that the elections should stand if the minutes are confirmed at the next Annual General Meeting. Mr. Peall proposed Dr. J. F. Monk, and Sir Hugh Elliott to fill the offices of Chairman and Vice-Chairman respectively, the motion was seconded by Mrs. B. P. Hall and carried unanimously.

The Chairman proposed the re-election for a further year of Mr. P. Tate as Hon. Treasurer, and Mr. M. W. Woodcock as Hon. Secretary, and the motion was seconded by Sir Thomas Barlow and carried unanimously.

Mr. P. Tate proposed a vote of thanks to the Auditors, which was seconded by Mr. D. Calder.

Mr. P. Tate also proposed a hearty vote of thanks to Mr. N. J. P. Wadley for his success in selling back numbers of the *Bulletin* to the Club's great benefit, and the motion was seconded by Mr. Philip Wayre.

Dr. W. R. P. Bourne proposed that the *Bulletin* should be published less frequently, and the various merits and demerits of the scheme were discussed. Sir Hugh Elliott suggested that the matter should be given further consideration by the Committee, and this was agreed.

The Chairman declared the Meeting closed at 7.25 p.m.

Plant poisons in the diet of wild birds

by JANET KEAR

Received 14th March, 1968

In general, little account seems to be taken in avian pathology of the resistance of wild birds to poisons occurring naturally in their plant food. The attention of the Wildfowl Trust was drawn to the matter when it was pointed out that if livestock ate the quantities of green, rotten and sprouting potatoes consumed each winter by waterfowl, they would soon show symptoms of solanine posioning. The observation that birds do take 'poisonous' food, particularly berries, is commonplace, but the implications are seldom considered. This short note does not seek to establish the physiological basis of the immunities birds must possess, interesting though this will be. As an initial step, it merely tabulates examples of European birds making meals of vegetable material known to cause illness or death in man and his domestic animals. The name of the toxin is given where it is known; many are alkaloids, defined as relatively complex, basic substances, occurring as products of plant metabolism and causing physiological reaction in animals (Henry 1939). Information on the plants was abstracted from Forsyth (1954) and on the birds from various ornithological sources.

TABLE

Plant species	Toxin	Bird species
Traveller's Joy *Clematis vitalba*	protoanemonin	buds taken by Bullfinch (Jourdain 1938; Newton 1959).
Anemone *Anemone nemorosa*	,,	buds, leaves and rootstocks by Pheasant (Hammer *et al.* 1958).
Lesser Celandine *Ranunculus ficaria*	,,	bulbils by Pochard, Mallard, Tufted Duck, Goldeneye (Campbell 1947); tubers by Partridge, Pheasant (Grimshaw 1912; Hammer *et al.*); leaves by Pigeon, Barnacle Goose, (Campbell 1946; Collinge 1913).
Crowfoot *R. sceleratus*	,,	leaves by Coot (Collinge 1924), whole plant by Wigeon and Pochard (Olney 1964).
Buttercup *R. acris*	,,	buds and leaves by Black Grouse, Partridge, Red-legged Partridge (Hammer *et al.* Campbell; Middleton and Chitty 1937).

Plant species	Toxin	Bird species
Bulbous Buttercup *R. bulbosus*	protoanemonin	roots by Partridge (Jourdain); leaves by Pheasant (Grimshaw); corms by Wood Pigeon (Campbell W. D. 1965).
Poppy *Papaver rhoeas*	rhoeadine	young leaves by Skylark (Mountfort 1950), buds and flowers by Partridge (Middleton and Chitty).
Spindle *Euonymus europaeus*	euonymine?	red berries by Magpie, Nuthatch, Pheasant Great Tit, Blue Tit, Marsh Tit, Long-tailed Tit, Blackbird, Robin, Hawfinch (Turcek, 1954; Hartley, 1954; Gibb, 1954; White, 1789; Mountfort, 1957); buds by Bullfinch (Newton).
Buckthorn *Rhamnus catharticus*	emodin	black berries by Nuthatch, Blackbird, Robin Warblers, Tits, Golden Plover, Hawfinch (Turcek, 1948; Jourdain; Mountfort).
Laburnum *Laburnum anagyroides*	cytisine	seeds by Hawfinch, Bullfinch, (Mountfort; Newton).
Broom *Sarothamnus scoparius*	,,	seeds by Hawfinch (Mountfort); buds by Bullfinch (Newton).
Bryony *Bryonia dioica*	bryonin	red berries by Blackbird, Starling (Hartley 1954; Havlín and Folk, 1965).
Hemlock *Conium maculatum*	coniine	seeds by Quail (Sergeant, 1948).
Cowbane *Cicuta virosa*	cicutoxin	seeds by wildfowl.
Ivy *Hedera helix*	?	black berries by *Turdus* species, Hawfinch, Robin, Garden Warbler, Blackcap, Corn Bunting, Moorhen, Pigeon (Hartley; Jourdain; Collinge, 1913; Mountfort).
Privet *Ligustrum vulgare*	ligustrin	black berries by Blackbird, Robin, Waxwing, Bullfinch, Blackcap, Garden Warbler, Pheasant, Starling, (Hartley; Jourdain; Newton; Gibb; Szijj 1956–57; Turcek).
Woody Nightshade *Solanum dulcamara*	solanine	red berries by Cirl Bunting, Hedge Sparrow, Golden Plover (Jourdain).
Black Nightshade *S. nigrum*	,,	black berries by Partridge, Starling (Vertse *et al.* 1955; Havlín and Folk).
Potato *S. tuberosum*	,,	tops by Black Grouse (Jourdain); green, sprouting and rotten tubers by Mallard, Greylag, Pink-footed Goose, Swans (Kear 1963).
Sorrel *Rumex acetosa* *R. acetosella*	oxalates	leaves and flower shoots by Barnacle Goose, Black Grouse (Campbell, 1936; Jourdain; Hammer *et al.*).
Daphne *Daphne mezereum*	mezerinic acid	red berries by Pheasant, Hawfinch, Greenfinch, Blue Tit, Blackcap, Lesser Whitethroat, Robin (Aplin, 1910; Jourdain; Campbell, W. D.) green (unripe) berries by Greenfinch (Pettersson, 1956).
Spurge Laurel *D. laureola*	,,	black berries by Hawfinch (Mountfort).
Sun Spurge *Euphorbia helioscopia*	euphorbiosteroid	seeds by Tree Sparrow, Partridge (Hammer 1948; Vertse *et al.*).
Dwarf Spurge *E. exigua*	,,	fruits by Stockdove (Murton, *et al.* 1964).

Plant Species	Toxin	Bird species
Oak *Quercus* sp.	tannic acid	acorns by Mallard, Pheasant, Pigeon, Jay, Starling, Magpie, Rook (Olney; Jourdain; Collinge).
Juniper *Juniper communis*	?	black berries eaten by *Turdus* sp. and finches (Jourdain); shoots by Black Grouse (Hammer *et. al.*).
Yew *Taxus baccata*	taxine	red berries by Spotted Flycatcher, *Turdus* sp., Bullfinch, Starling, Waxwing, Moorhen, Pigeon, Greenfinch, Jay, Robin, House Sparrow, *Parus* spp., Blackcap (Hartley; Jourdain; Turcek; Campbell, W. D.; Olney, 1966) kernels by Hawfinch, Nuthatch, Great Tit (Mountfort; Jourdain); shoots by Hawfinch (Mountfort).
Lords and Ladies *Arum maculatum*	?	red berries by Willow Warbler, Whitethroat (Lancum, pers. com.); corm possibly by Blackbird (Campbell, W. D.).
Horsetail *Equisetum* sp.	palustrine & thiaminase	young plants by Greylag Goose, Pink-footed Goose (Campbell 1947; Sladen 1960).
Bracken *Pteridium aquilinum*	thiaminase	shoots by Capercaillie (Jourdain).

In addition to examples cited in the Table, birds take the dried seeds of certain poisonous plants, such as the red fruits of *Iris foetidissima* and seeds of *Chenopodium album*, *Polygonum hydropiper* and *Ranunculus* species, but probably little toxin occurs in the part consumed and thus their immunity is not in question. Even in the cases given, dosage may be small if the foods are taken irregularly. Further, many succulent fruits contain hard seeds that pass through the bird's gut without digestion or are ejected by regurgitation, and here the toxin is often present in greatest quantity within the kernel; this is true, for instance, of Yew berries, the flesh of which is taken by many avian species. But sometimes large doses are tolerated; Mountfort (1957) describes Hawfinches repeatedly cracking Yew seeds for the kernel, even collecting the seeds cast up by other berry-eating birds, and yet the alkaloid taxine, contained in the endocarp, is said to cause sudden death through cessation of heart action in 'all animals' (Forsyth 1954). The diet of this finch contains no fewer than six items harmful to many mammals. As another dramatic example, Kalmbach (1943) found that gallinaceous birds were immune to strychnine, the powerful alkaloid extracted from the seeds of an Asiatic tree *Strychnos nux-vomica*.

It is not suggested, of course, that any immunity is widespread among birds; what is agreeable to the Quail could prove fatal to the Budgerigar, and some plants are well known to cause trouble to the domestic fowl. Cuckoos may be the only species resistant to the strongly irritant substances (found to be histamines (Frazer 1965)) in the bodies and larval hairs of certain Lepidoptera. Vultures are unusual in tolerating putrid carrion that would poison most vertebrates by bacilliary action. Unlike other birds, they whitewash their legs and feet with faecal matter, suggesting the presence of a protective antiseptic in the gut. It may be that, as with tolerance to salt (Tordoff 1954), immunity to specific toxins "runs in families" and will be, therefore, of considerable interest in avian taxonomy. Mammals themselves are known to differ in their reactions to certain posions; acorns are taken by pigs but cause trouble to sheep and cattle, and the rabbit appears to possess remarkable powers of detoxifying many alkaloids, in particular those found in *Atropa* and related species.

There are a number of plants bearing poisonous berries which, in the botanical sense, are assumed to be bird-dispersed, yet there seem to be few, if any, records of birds actually eating them. These include the black berries of Deadly Nightshade *Atropa belladonna*, Baneberry *Actaea spicata*, Cherry Laurel *Prunus laurocerasus* and Herb Paris *Paris quadrifolia*, and the red berries of Black Bryony *Tamus communis* and Lily of the Valley *Convallaria majalis*. Perhaps these plants are at the edge of their range in Britain and could be found to be bird-dispersed elsewhere. But one wonders whether a common hedgerow fruit such as Bryony, so often left to rot, could be unpalatable, although this explanation calls in doubt the whole evolutionary process of berry development. Turcek (1963) certainly found that some plant species were greatly preferred by a wide variety of European fruit-eating birds and so were more efficiently dispersed by them than others, and Olney (1966) has found similar preferences in British garden birds. Much remains to be learnt about the properties determining selective value of food objects. Could a conspicuous berry carry what was in effect a warning coloration to birds, just as certain unpalatable and dangerous insects do?

It is comforting to find few references in the literature to indirect human poisoning caused by eating wild birds with a catholic diet. The flesh of Quail that had fed apparently on Hemlock seeds, and thus taken the same toxic alkaloid that killed Socrates, caused illness among people in Algeria (Bicknell 1960), and Hazel Hens that ate *Kalmia latifolia* are said to have poisoned humans who later ate the meat. Much might be learnt from the chemical background to these cases, implying as they do, the direct transfer of toxins from the bird's gut to its muscles.

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A new species of warbler from the Aldabra Atoll

by C. W. Benson and M. J. Penny

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Introduction: The form of warbler here to be described as new to science was discovered during the current Royal Society Aldabra Expedition, which started in August 1967, the first specimen being taken by Penny. Any localities mentioned from the Aldabra Atoll, which lies in the western Indian Ocean at 9° 24′ S., 46° 20′ E., may be found on the maps (figures 3 and 4) in Stoddart and Wright (1967). This warbler seems so well differentiated as to merit description as a full species rather than as a subspecies of *Nesillas typica* (Hartlaub), of Malagasy (formerly Madagascar) and the Comoro Islands. It and *Dicrurus aldabranus* Ridgway are the only two land birds endemic to the atoll to have become differentiated to this degree. We name this form:

Nesillas aldabranus, sp. nov.

Description: The following is a brief diagnosis: A dingy coloured species, brown above, lacking any rufous tones as in *N. typica* or olive as in *N. mariae* Benson, endemic to Moheli, Comoro Islands; white below, lacking any yellowish, buffy or dusky tones, or well defined dusky streaking on the chest. In general colour, nearest to *N. t. lantzii* (Grandidier), of south-western Malagasy, but much darker brown above. A long-billed and long-tailed species, see under *Further systematic remarks* below.

A detailed description of the type, with code-references to the colour-chart of Villalobos-Dominguez and Villalobos (1947: tint OOS) is as follows: Mantle and scapulars dull brown (9 3°), somewhat more greyish on crown (10 2°) and more rufous on rump (9 5°); wing-coverts, primaries and secondaries darker than mantle and scapulars (6 3°), outer webs tinged rufous as on rump; bastard wing and several outer feathers of lesser coverts pure white (20); under wing-coverts creamy buff (19 12°); chin, throat and centre of abdomen almost pure white (19 3°); remainder of underside white tinged with buff (18 4°); flanks pale brown (15 5°); lores and superciliary stripe white, as chin and throat; ear-coverts intermediate between general brown colour of upperside and white of underside.

Colour of soft parts (*of type*): Iris mid-brown; upper mandible dark horn, lower light horn; legs and feet grey, soles yellowish.

Measurements (*of type*): Wing 63; tail 86; tarsus 24; culmen (exposed) 15, (from base of skull) 18 mm.

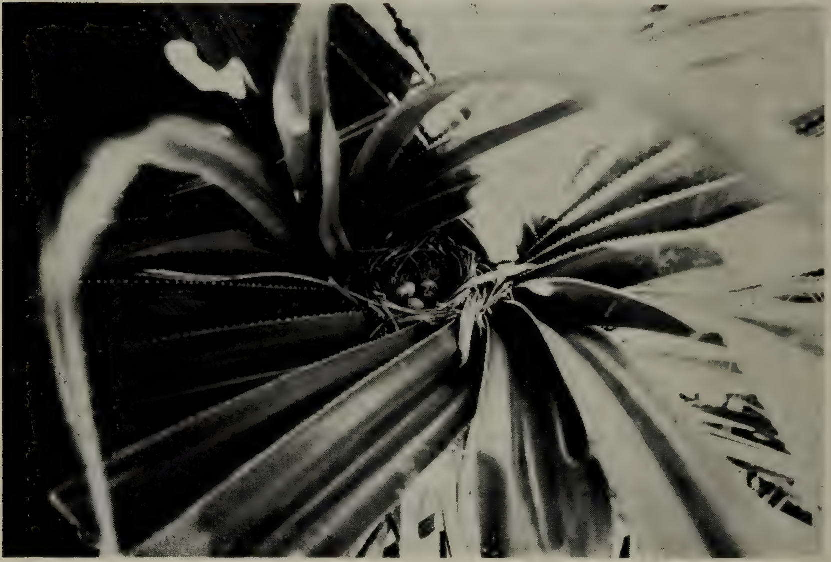
Type: An adult female collected on 11th December 1967, together with its nest and three eggs, one quarter mile (400 metres) from western extremity of Middle Island (Johnny Channel, or Gionnet), on northern coast of Aldabra Atoll; collector M. J. Penny, during Phase II of the Royal Society Aldabra Expedition; in the British Museum (Natural History), registered number 1968–43–1.

Distribution: Only known from the type-locality as defined immediately above.

Other material: A second specimen was collected by Benson on 29th January 1968 during Phase III of the expedition, only a few yards from where the type was collected. It is also in the British Museum, and is a male, wing 70; tail 91; tarsus 24; culmen (exposed) 15, (from base of skull) 18 mm. The testes were small, measuring only 2 x 1.5 mm., but the skull was fully ossified. It closely resembles the female, but is a darker brown on the mantle and scapulars, the crown the same colour, lacking any contrasting greyish. It also has some indistinct dusky streaking on the chest. These minor differences may be individual regardless of sex, though on the other hand the female is in worn dress showing no sign of moult; whereas the male has fresh feathers appearing on the crown and mantle. It is indeed in general body-moult. The outer seven primaries are old, the next two in pin. The greater wing-coverts are also in pin. The tail is worn, showing no sign of any moult. The weight was 19.5 gms., and the palate was orange in colour, much the same as in *N. typica* in the Comoros (Benson, 1960a: 81).

We have no evidence of the collection of any earlier specimen of *N. aldabranus*. The genus is not mentioned in any account of the birds of Aldabra (see historical survey in Benson, 1967: 64). But it seemed just possible that a specimen might have been collected for Lord Rothschild, sent to the Tring Museum, and have been overlooked, since no special report on this collection has ever been published, nor is one available in manuscript form. But G. S. Keith (pers. comm.) cannot find such a specimen in the American Museum of Natural History, where most of the Tring collections of birds were sent in 1932.

Nest and eggs: The three eggs collected were fresh, though it was evident from the gonads of the parent that the clutch was complete. They are ovate, smooth, with a slight gloss, very pale purplish, blotched and speckled dark brown, with a very few small scrawls, on underlying pale lilac blotches, the markings as a whole being concentrated in a well defined ring near the larger end of each egg. One egg has a more markedly pink flush towards the larger end, and the markings are heavier than in the other two. Two eggs measure 20 x 16, 20 x 15 mm.; the other was broken. These eggs are comparable in size with the smallest of a series of 21 miscellaneous eggs of *N. typica* from Malagasy in the British Museum, showing much variation in intensity of ground-colour and degree of marking. Several resemble the Aldabra clutch in both these respects, though not one has so clearly a defined ring of markings, and most of them have much more scrawling. Scrawls are also shown in plate 13, fig. 6 accompanying Newton (1863: 343, 461), who collected a clutch in Malagasy. The egg as painted is a close match with some of those in the British Museum. Benson (1960a: 82) reports similar eggs from Anjouan, in the Comoros, now in the Muséum National d'Histoire Naturelle, Paris.



Photograph by M. J. Penny

Nest and eggs of *Nesillas aldabranus*

The nest was two feet above the ground, in the leaf-bases of a young *Pandanus* sp. shrub, and is a cup made of shredded leaves of this same plant, coarser on the outside, finer within, and lined with grass-stems. Its approximate dimensions are: width, external 120, internal 80 mm.; depth, external 80, internal 30 mm. It was at the centre of a clump of young leaves, well protected but unconcealed, on the edge of a path. Two more nests, both empty, were found on 28th January, both less than 100 yards from the first one. One was 10 feet above the ground, near the top of a thicket, built between two stems (respectively $\frac{1}{6}$ and $\frac{1}{3}$ inch thick, at an angle of 80° to each other) of a shrub *Mystroxylon aethiopicum*. The other was five feet up, in a *Pemphis acidula* shrub some seven feet high, built between two forking stems each about $\frac{1}{3}$ inch thick. Both nests were in good condition, apparently not long abandoned. Materials, construction and dimensions are similar in all three, now in the British Museum together with the eggs.

Probably the clutch-size on Aldabra is either two or three. From Malagasy, Newton (1863: 343) records a C/3, Rand (1936: 441) a C/2. From Anjouan, in the Comoros, Benson (1960a: 82) records three C/2. In the Seychelles, Loustau-Lalanne (1962: 5) gives C/2 for another warbler, *Bebrornis sechellensis* (Oustalet), but the Bristol Seychelles Expedition of 1964–65, of which Penny was the leader, noted five fledged young, each of which was the only bird with its parent. The clutch-size of the Rodriguez species, *B. rodericanus* (A. Newton), may also be only one, for Sharpe (1879: 461) mentions that "Mr. Gulliver brought an egg." This single egg is in the British Museum.

Voice: Penny saw a second bird at the nest, presumably the male parent. He recorded what he took to be an alarm-call as a harsh "chirrr", and incidentally also noted that neither bird was particularly timid. He found that the one would answer the other with a nasal, trisyllabic, not unmusical "chinkachoy". Benson could not hear any call, the voice evidently being already too high pitched for his ear. But A. W. Diamond described to him an alarm-call as a short, scolding chatter, reminiscent of that of a Wren *Troglodytes troglodytes* (Linnaeus) in England, and probaby the same as that noted by Penny.

Food and ecology: The stomach contents of the male, which was foraging some two feet above the ground, have been determined by A. M. Hutson, of the Department of Entomology, British Museum, as follows: many small spiders (Arachnida); many moths (Lepidoptera); many winged ants (Hymenoptera); some small beetles (Coleoptera) and bugs (Hemiptera and Homoptera); one caterpillar (Lepidoptera) and possibly a small grasshopper (Orthoptera).

The type-locality of *N. aldabranus* was visited by Dr. F. R. Fosberg with Benson on 2nd March 1968. Fosberg has described the vegetation as a dense tall scrub about 15 feet high, in places almost forest, and in which he found the following plants (identifications still tentative):

Shrubs	*Remarks*
Pandanus sp.	The five most common species. In some places the *Pandanus* was growing almost pure; in others the *Pemphis* likewise
Pemphis acidula Forst.	
Sideroxylyon inerme L.	
Dracaena reflexa Lam.	
Mystroxylon aethiopicum (Thunb.) Loesn.	
Terminalia fatraea DC.	Fairly common
Acalypha claoxyloides Hutch.	
Euphorbia abbottii Baker	
Maytenus senegalensis (Lam.) Exell	
Ficus sp. (leaves medium-sized)	
Tricalysia cuneifolia Baker	Occasional
Scutia commersonii Brong.	Rare
Ficus sp. (leaves large-sized)	

Other smaller plants noted were *Lomatophyllum borbonicum* Willd., *Lepturus repens* (Forst. f.) R. Br. and *Asystasia* sp. (herbaceous); juvenile specimens of *Solanum aldabrense* Wright; *Caesalpinia bonduc* (L.) Roxb.

and *Ipomoea tuba* (Schlecht.) Don (climbing vines); and *Pleurostelma cernuum* (Decne.) Bullock.

Except for the *Dracaena*, normally uncommon on Aldabra, Fosberg did not find any ecological peculiarity about this locality. Yet *Nesillas aldabranus* has only been found there, despite the fact that during the period August 1967 to March 1968 between us we have searched the greater part of Aldabra for land birds. Furthermore, several other members of the expedition have kept a special watch for the bird, but without result. However, at present a cleared path runs east from Johnny Channel for only about one third of a mile (600 metres) along the north coast of Middle Island. Further east, observation is virtually impossible because the scrub is so thick, though we got no evidence of the bird's occurrence within two miles (three kilometres) of the eastern end of Middle Island, where it again becomes relatively easy to move about. But plainly the intervening nine miles (14 kilometres) require investigation. This is only the likely area for its occurrence, and searches on Ile Polymnie, to the west of Johnny Channel, have been fruitless. In advance of our general report on the land birds of Aldabra, it can be stated with certainty that no other species is so restricted in distribution. The majority of them range through the greater part of the atoll; for the most recent accounts, see Benson (1967: 70–89) and Gaymer (1967: 116–122).

Further systematic remarks: The resemblance between *N. typica lantzii* and *N. aldabranus*, widely separated geographically, yet both dingily coloured, may be due to both living in a relatively arid climate. According to Rand (1936: 443), *lantzii* inhabits the dry south-western part of Malagasy, where the rainfall does not average anywhere more than 1,000 millimetres (40 inches) per annum, and in the extreme south-west is less than half this figure (rainfall map of Malagasy in Rand, 1936: 206). No record had ever been kept on Aldabra until a rain gauge was established at the Settlement on West Island on 17th October 1967, between which date and 31st March 1968 the rainfall was 14.17 inches. These are the very months in which the figure may be expected to be highest, as in Malagasy, where the hot, wet season is from November to April (Rand, 1936: 205). This initial figure does not suggest a high rainfall on Aldabra. Local belief was that it was unusually low, and there are the following figures from the island of Assumption, only 20 miles to the south of Aldabra: 1965, 32.03 inches; 1966, 36.24 inches. Nevertheless, the average on Aldabra may be less than anywhere in the Comoro Islands (for some rather scanty figures suggesting a figure nowhere of appreciably less than 40 inches per annum, see Benson, 1960a: 10–11) or Malagasy except the south-west. Benson (1967: 105) has already drawn attention to a reduction of melanin, often resulting in an increase in pallor, in some other land birds on Aldabra and *N. aldabranus* seems to provide another instance of this tendency.

Benson (1960a: 79) gives tail/wing ratios for various forms of *Nesillas* in Malagasy and the Comoros, but did not give a figure for *N. t. lantzii*, which may now be added, from material in the British Museum:

	Wing	*Tail*	100 X tail / wing
5♂♂	62, 62, 65, 65, 66	80, 82, 82, 85, 85	
7♀♀	57, 59, 60, 61, 61, 62, 63	71, 73, 75, 76, 76, 77, 78	
	average 61.9 mm.	average 78.3 mm.	126.5

The ratio for *N. mariae* (Benson's 'series (a)' from Moheli) is 102.5, while that for *N. typica* in the Comoros varies between 94.3 and 119.9, and in Malagasy between 118.5 and 126.5. The comparable figure for *N. aldabranus* (from above, ♂♀, wing 70, 63, tail 91, 86 mm.) works out at as high as 133.1.

The following are average lengths (in mm.) of culmen (exposed part) and tarsus, of material in the British Museum, with the addition of two syntypes of *N. t. longicaudata* (E. Newton) in the University Museum of Zoology, Cambridge:

		Culmen (exposed)	*Tarsus*
	Malagasy		
N. t. typica	33♂♂	13.1	25.4
	12♀♀	12.6	24.3
N. t. obscura	7♂♂	14.7	25.4
	3♀♀	13.6	23.6
N. t. ellisii	14♂♂	13.1	25.7
	7♀♀	13.1	24.8
N. t. lantzii	5♂♂	13.2	23.6
	6♀♀	13.2	22.5
	Comoro Islands		
N. t. longicaudata (Anjouan)	3♂♂	14.3	25.2
	3♀♀	14.2	24.7
N. t. brevicaudata (Grand Comoro)	2♂♂	14.0	27.5
	3♀♀	15.0	26.6
N. t. moheliensis (Moheli)	1♂	15.0	25.0
	1♀	14.0	25.0
N. mariae (Moheli)	3♂♂	14.7	22.7
	♀	—	—
	Aldabra		
N. aldabranus	1♂	15.0	24.0
	1♀	15.0	24.0

These figures, taken by Penny independently, suggest that there is a tendency to a longer bill in the Comoros and on Aldabra than in Malagasy, the two Aldabra figures being as high as any. But the Malagasy *N. t. obscura* Delacour forms an exception, since it is long-billed. These tendencies are corroborated by the figures taken by Benson (1960a: 81), who measured the culmen to the base of the skull (as explained *op. cit.*: 30), not the exposed part only. The two Aldabra specimens both have a culmen length (from base of skull) of as much as 18 mm., and on this basis the ratio of 100 x culmen/wing works out at 27.6, thus higher than in any Malagasy or Comoro form measured by Benson (1960a: 81), with the exception of *N. t. longicaudata*. Benson (1960b: 200) has drawn attention to a tendency to a longer bill in the Comoros than in Malagasy, not only in *Nesillas typica*, but in several other birds too. Grant (1965) found that in North America and Mexico there is a strong tendency for island birds to have a longer bill than their mainland counterparts, and suggested that this is an adaptation to deal with a greater range of food sizes. He also found a tendency for the tarsus to be longer in island birds, though this is not supported by the figures above, with the exception of *N. t. brevicaudata*, the sample of which is rather small.

Brief mention may be made of *Bebrornis sechellensis* and *B. rodericanus*. Benson (1960a) did not consider the latter, though suggested that the former is congeneric with *Nesillas*. In that case, the correct name to use is *Bebrornis*, which antedates *Nesillas*, see Sclater (1930: 518, 574). But it is perhaps best to maintain both genera. Both *sechellensis* and *rodericanus* have some olive wash above, and yellowish buff below. Benson (1960a: 80) has given measurements for *sechellensis*, showing that it is unusually short-tailed and long-billed. Comparable figures for *rodericanus*, using material in Paris and Cambridge, as well as in the British Museum, regardless of sex are:

$12_{\circ\circ}$ wing 58 – 63 (61.1) mm.
tail 67 – 74 (70.5) mm.
$\dfrac{100\ \mathrm{X\ tail}}{\mathrm{wing}}$ 115.4
culmen (from base) 17 – 19 (17.9) mm.
$\dfrac{100\ \mathrm{X\ culmen}}{\mathrm{wing}}$ 29.3

Considering also figures for *Nesillas*, it can be seen that *rodericanus* is both relatively long-tailed and long-billed. Indeed, the culmen/wing ratio is the highest of all.

ACKNOWLEDGMENTS

Special thanks are due to A. W. Diamond for his assistance in the discovery of *N. aldabranus*. Benson would like to thank in addition H. Stickley. The co-operation of Dr. F. R. Fosberg and others has already been mentioned, while Dr. D. R. Stoddart, the leader of the Royal Society Aldabra Expedition, has advised in the preparation of this paper. We are also grateful to the staff of the Bird Room in the British Museum for their assistance.

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New species records for the Bahamas

by Andrew Paterson

Received 14th March, 1968

The number of species recorded to date is nominal in many respects. There is a paucity of observers and much of what is being done is by visiting ornithologists from the U.S.A. and of the total check-list there are nearly twenty per cent single records. Many of the new records occur during the autumn migration and during the winter months. This is due to the fact that many of the newly recorded species are of North American, rather than Antillean origin. The possibility is highly in favour of species of south-eastern American origin occurring as accidental visitors and many of these are stragglers to western Florida during the autumn.

For waterbirds, Podicipedidae, Anatidae, and Laridae, the chances are that they will wander from the north following the track of the Gulf Stream and the Florida coastline.

Cinnamon Teal, *Anas cyanoptera*. A single male at West End, Grand Bahama on 27th December, 1967. Most individuals winter to the south from Texas and Mexico. Bond (1961) lists four records from Cuba between 9th January and 28th February.

Red-necked Grebe, *Podiceps grisegena*. A single bird in company with Lesser Scaup *Aythya affinis* and Pied-billed Grebe *Podilymbus podiceps* on Lake Cunningham, New Providence, on 30th December, 1967. Red-necked Grebe occurs as far south as the Florida Keys occasionally. This is also a new record for the West Indies.

Records of new species for Andros Island

These records cover the period September, 1967 to February, 1968. Andros Island is the largest of the Bahama Islands and much of it is inaccessible except by helicopter. Without exception these records are from the Fresh Creek area, some 30 miles south of the northern tip of Andros on the east coast.

Roseate Spoonbill, *Ajaia ajaja*. Five adults on 2nd December, 1967. There were also reports of between two and four individuals in the same area from September until then. Roseate Spoonbills breed in the south of Florida and also in the southern Bahamas.

Pintail, *Anas acuta*. Previous records were from Grand Bahama and New Providence. Records for Andros constitute a male and female, on 6th January, 1968 and a single male on 16th February, 1968.

Redhead, *Aythya americana*. A single female on 3rd December, 1967 with Ring-necked Ducks *Aythya collaris*. Previous records for the Bahamas are from New Providence only.

Red-breasted Merganser, *Mergus serrator*. A single male on 14th October, 1967. A reliable observer also saw what he took to be a male in the same area at the end of November. Previous records were from New Providence only.

Kittiwake, *Rissa tridactyla*. A single bird found exhausted on the beach, Fresh Creek, Andros, on 3rd February, 1968. This was a first winter immature bird. This is particularly interesting as Coulson (1966) states that the winter range of the Kittiwake ' . . . the whole of the North Atlantic north of latitude 40° N. to the southern limits of the winter ice.' Here the latitude is approximately 24° 45′ N. Bond (1961) lists records, number unspecified, from Havana, Cuba, in early January. This is the first record for the Bahamas.

Blackburnian Warbler, *Dendroica fusca*. A single male on 1st October, 1967. This warbler has been recorded for several other islands.

Connecticut Warbler, *Operornis agilis*. One male on 25th October, 1967. They have been recorded for at least three other islands.

I am grateful to C. Russell Mason of the Florida Audubon Society for making available lists of species seen by members of that Society in the Bahamas.

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Range and variation of the Icterine Bulbul in Uganda

by HERBERT FRIEDMANN

Received 26th April, 1968

The Icterine Bulbul, *Phyllastrephus icterinus tricolor*, occurs side by side with the remarkably similar, but somewhat larger Xavier's Bulbul, *P. xavieri xavieri* and because of their exceedingly close resemblance both have been misidentified often in the past, making the proper allocation of literature records very difficult. Chapin (1944) first elucidated the distinction of the two, and in his later (1953, p. 166–169) account showed that the smaller *icterinus* ranged from Fernando Po and southern Cameroun, south to Gabon, and east to the lower Congo, Kasai, upper Congo, and the Semliki valley, while the larger *xavieri* occurred from southern Cameroun to the middle and upper Congo, to the Semliki, and to the Budongo and Bugoma forests in extreme western Uganda. Van Someren (1932, p. 344) had, however, earlier recorded *xavieri* (under the name *P. icterinus seth-smithi*) still farther to the east in Uganda, from Mubendi and from Butambara (= Butambala, 0° 12′ N., 32° 08′ E.) Friedmann (1966, p. 31) later added Bwamba as an additional specimen locality in Uganda.

Recent collections resulting from zoological surveys of the isolated forests of western Uganda, made under a National Science Foundation grant (GB–5107) have revealed that both of these bulbuls occur together in a number of localities in that country, not only in the Bwamba and Budongo forests of extreme western Uganda, but also as far to the east as the Malabigambo forest, Sango Bay, near Masaka, in the northern part of the west side of Lake Victoria. The Icterine Bulbul had not been reported previously from specific localities in Uganda, although White (1962, p. 92) did include "western Uganda" in its range, apparently on the basis of unpublished data. The present specimens from the Malabigambo forest extend its range about 150 miles to the east. It is now known to occur in at least the three forested areas mentioned above, and will probably be found elsewhere as well. Xavier's Bulbul is now known from at least seven Uganda forests: Budongo, Bugoma, Butambala, Bwamba, Malabigambo, Masindi and Mubendi.

As Chapin was the first to remark, the distributional patterns of the various species of the genus *Phyllastrephus* overlap to the extent that it is not unusual to find two or more of them in the same localities, but it is unusual to find birds so similar in their coloration and habits as *xavieri* and *icterinus* living side by side over most of their extensive ranges. That they can do so implies effective isolating mechanisms of the nature of which we are still completely ignorant. In the coastal belt of eastern Africa there is a parallel case where the species *P. strepitans* and *P. terrestris* overlap and remain distinct in spite of their mutual similarities.

P. xavieri and *P. icterinus* may be told apart only from their measurements, and inasmuch as the females are considerably smaller than the males, wrongly sexed specimens can easily confuse the picture, as the males of *icterinus* and the females of *xavieri*, if inaccurately sexed, cannot be told apart. Confining the study to reliably determined examples we find all our specimens of *icterinus* agree fairly closely with the measurements given by Chapin. The dimensions of our specimens are as follows: males; wing 70.5 to 81.1; tail 65.0 to 75.4; culmen from anterior end of nostril 9.5 to 10.6; females: wing 65.6 to 70.9; tail 58 to 71.1; culmen from anterior end of nostril 9.0 to 10.1 mm. There is a peculiar mensural difference between the Sango Bay birds and those from extreme western Uganda (Bwamba and Budongo), and from the Congo, which suggests an incipient differentiation chiefly in the shorter bill length in the eastern birds of both sexes, and in longer wing length (average) and longer tails in males, but not in females, of the Sango Bay population. Thus the length of the culmen from the distal (anterior) end of the nostril to the tip of the bill in Congo and west Uganda birds varies from 10.6 to 10.9 (males), 9 to 10.1 (females) while in Sango Bay specimens the range is from 9.5 to 10.2 (males) and from 9 to 9.6 mm. (females). The wing length in Congo and west Uganda birds varies from 70.5 to 80 (males), 65 to 70.4 (females) while in Sango Bay birds it varies from 75.3 to 81.1 (males), 66.7 to 68.2 (females); the tail length of western males is 64 to 73, of western females 56 to 71.7 and in eastern birds it is 70.3 to 75.4 (males) and 58 to 61.2 (females). The difference in size between the Sango Bay birds and the more westerly ones is not sufficient to warrant subspecific recognition, but it is of interest in that it indicates a peculiar situation wherein one sex shows a dimensional divergence greater than the other.

The Malabigambo forest is the easternmost locality where both species are known to occur together. Xavier's Bulbul was previously known to occur in two other spots equally far to the east: Butambala, which is about 25 or 30 miles to the north-east of the Malabigambo, and Masindi, which is on about the same degree of longitude (31° 42′ E.). That both of these species of bulbuls are common in the Sango Bay area is indicated by the fact that in a single month's general bird collecting, no fewer than 12 specimens of *P. icterinus tricolor* and eight of *P. xavieri xavieri* were obtained, between 21st January and 16th February, 1968. Four of the males of *P. icterinus* had enlarged testes; none of the females showed any ovarian enlargement. The stomach contents showed this bulbul to be wholly insectivorous, but the insect fragments were not identified. The weights of male *icterinus* varied from 18 to 21.5 grams, while male *xavieri* ranged from 20 to 26 grams.

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First specimen of *Otus scops turanicus* (Loudon) from Africa

by HERBERT FRIEDMANN AND STUART KEITH

Received 16th May, 1968

Among the birds collected for the Los Angeles County Museum by the Knudsen-Machris East African Expedition in 1963 is a specimen of *Otus scops turanicus* (Loudon). It was collected at Bura, on the Tana River, Kenya, on 5th March, 1963. Its large size (wing 157) indicates that it cannot be any of the local African races (the *senegalensis* group), whose wing measurements are given by White (1965) as 126–140. It must therefore be one of the wintering Palaearctic birds, which are larger. The only Palaearctic race listed by White (*loc. cit.*) as reaching Africa is nominate *scops*, but the Machris bird is too pale and grey to belong to this race. Keith, together with Charles Vaurie, compared it with specimens of *Otus scops* subspp. in the American Museum of Natural History, and it agreed with their series of *Otus s. turanicus*.

This is therefore the first specimen record of this race for the African continent, although Vaurie (1965) surmised that it probably migrates through Arabia from its breeding grounds in western Asia to winter in north-eastern Africa.

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CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

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DINNERS AND MEETINGS FOR 1968

17th September, October jointly with B.O.U., 19th November, 17th December.

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The six hundred and fifty-second meeting of the Club was held at the Rembrandt Hotel, London, on the 17th September, 1968.

Chairman: Dr. J. F. Monk

Members present: 16; Guests 2.

Mrs. B. P. Hall spoke on her recent holiday in Alaska and gave an account of the birds seen in the McKinley Park, Fairbanks, Nome and Anchorage together with a description of an auklet colony on St. Lawrence Island in the Bering Straits.

More of the plumages, moults and breeding seasons of southern African starlings

by R. K. Brooke

Received 5th April, 1968

Brooke (1967 a, b) has shown that the glossy starlings *Lamprotornis mevesii* (Wahlberg) and *australis* (Smith) have their full moult immediately before instead of immediately after breeding, a pattern of moult otherwise only known among passerine birds in *Carduelis spinoides* Vigors in the Himalayas. Through the courtesy of their authorities I have recently been able to examine some of the starlings in the collections of the National Museum, Bulawayo and the Transvaal Musuem, Pretoria. The Transvaal Museum proves to have 41 specimens of *L. australis.* A study of these does not require me to modify the remarks on the species' moults in Brooke (1967 b): however three specimens are worthy of particular note; one is a breeding record and two show partial albinism. There is a newly fledged female juvenile taken by O. P. M. Prozesky on 30th April 1959, 76 miles from Kuruman on the van Zylsrust road, and this makes the fourth March breeding record. The short tail already shows the graduation in the length of the rectrices which will be more apparent when fully grown. The general appearance is one of dull green iridescence with a black abdomen, *i.e.* very similar to a juvenile *L. nitens* save for the graduated tail and lack of notching in the primary wing feathers. There is virtually no suggestion of the purple iridescence that will appear after the post juvenal moult and which finds its full development in the adult bird.

On 12th and 14th June 1911 two males were collected at Okahandja, South West Africa, showing partial, asymmetrical albinism. The first specimen has two white feathers in the crown above the left eye, one at the right rear corner of the crown, a circlet of white interspersed with normal feathers from the mantle down the right side of the neck and across the breast but not on the left side of the neck, a few on the left front of the abdomen, a few on the central part of right flank and, one in front of the vent. The second specimen has a group of some seven white feathers on the right side of the abdomen. Together with the partial albino described in Brooke (1967 b) three have been found in a series of 70 specimens, an extremely high rate for an Ethiopian species. The only published case of partial albinism in *Lamprotornis* of which I am aware is that in *L. chalybaeus* described by Benson (1962). There is a male *L. chalybaeus* in advanced moult in the National Museum, Bulawayo, collected on the Lundi River, Rhodesia, on 30th April, 1962 which has one white feather on the throat just right of centre. This poverty of records is significant since these starlings are freely collected because of the great difficulty of visual (field) identification and I have certainly seen a thousand specimens including the one described by Benson (*op. cit*,).

Benson, Brooke and Vernon (1964) have shown that in Rhodesia, Zambia and Malawi starlings breed from August to March with October and November as the principal egg laying months. The only exceptions have been discussed in Brooke (*op. cit.*). The vegetative and climatic systems of adjacent territories are similar and the breeding seasons of starlings can reasonably be supposed to be the same. The following starlings undergo the normal complete post nuptial moult:—

Creatophora cinerea (Menschen)	Wattled Starling
Cinnyricinclus leucogaster (Wagler)	Amethyst Starling
Lamprotornis nitens (L.)	Red-shouldered Starling
L. acuticaudus (Bocage)	Sharp-tailed Starling
L. chalybaeus Hemprich and Ehrenberg	Greater Blue-eared Starling
L. chloropterus Swainson	Lesser Blue-eared Starling
Neocichla gutturalis (Bocage)	White-winged Starling
Onychognathus morio (L).	African Red-winged Starling

L. splendidus (Vieillot) the Splendid Starling which is a breeding migrant to Zambia from August to November judging by material examined, arrives in very fresh plumage. The moults of this species should be studied in a collection in which all months of the year are represented as the possibility exists that it either has two complete moults a year or has a complete moult immediately before migrating to breed.

Little is known of the breeding of *Onychognathus nabouroup* (Daudin) the Pale-winged Starling. What there is is in Layard and Sharpe (1875), Sharpe (1904) and Hoesch and Niethammer (1940) and since none of these accounts is readily available I now quote them. Layard and Sharpe (1875) say "eggs sent by Mr. H. Jackson are a light verditer speckled throughout with minute brown specks. Axis 1″ 4‴; diam. 9‴. They nest in holes of banks and inaccessible precipices." Sharpe (1904) says "The nest was made of dried grass and was built in a crack in the rocks or under sloping stones. We (*i.e.* Grant and Seimund) never found the eggs but got one nest with three young birds." Hoesch and Niethammer (1940) say "Gregarious, even in the breeding season (during the rains). Nests in cracks in overhanging rocks, never in holes in trees. On 27th April 1934 a nest was found in an artificial site being 25 cm. down the hollow of a steel pylon. On a thin layer of plant material and grass lay two newly hatched youngsters and beside them fragments of egg shell pale greenish blue in ground with small red-brown spots. Beside the nest a pair of Rosy-faced Lovebirds *Agapornis roseicollis* (Vieillot) were breeding." McLachlan and Liversidge (1957) add that the clutch is three to four eggs and that one clutch measures 33.5 x 22.2, 32.2 x 22.5, 32.2 x 22.0 mm. Five nests (including a replacement clutch) have been reported to the PF1AO nest record scheme: 4th January 1957 C/4 a heap of straw with a cup in the middle on a rafter in a farm shed in the Jansenville district of the Cape Province. The parents threw the eggs out of the nest shortly before hatching apparently as a response to too much human activity in the area (J. Blignaut). 11th March 1962 young in a nest on a kranz (precipice) in the Mountain Zebra Park, Cradock District C.P. (C. J. Skead). 17th September 1965 young in a nest on a kranz by the Vosburg road, Carnarvon District C.P. (J. Martin). V. L. Pringle took C/5 on 6th December 1947 from a nest of green grass in a hole in a creeper clad kranz at Huntly Glen, Bedford District C.P. A few days later on 18th December he found that a replacement C/5 had been laid. Concerning these clutches and their authors, the Pale-winged Starlings, he writes:—

> "I have known these birds to nest in at least three sites on my farm, in all instances in a cliff face. One nest is in a shallow hole in the face about eight feet up, the second is on a small ledge in a crevice in a cliff about 30 feet up the face, and the third was in a fall of loose stones and shale held up by a clump of bushes. In all instances the nest is constructed of fine rootlets and grass lined with fine grass and horse hair very closely packed.
>
> *Clutch No. 1*
>
> Taken from the fall of stones on 6/12/1947. The bird was on the nest and incubation had just commenced. All the eggs in this clutch are more elongated than in the second clutch. The eggs are a very pale grey-green colour, and marked with pale red-brown dots and smudges these being very small and some barely visible. There are five eggs in the clutch, measuring
>
> 32.0 x 20.8, 30.8 x 21.3, 30.7 x 21.6,
> 30.1 x 21.2, 29.4 x 21.5
>
> The second clutch, also of five, was taken from a nest built in the same place on the 18/12/1957. Incubation had started. The eggs of this clutch are slightly less marked than the first and are slightly paler in colour. The eggs measure
>
> 31.0 x 21.9, 30.9 x 21.6, 30.4 x 22.0,
> 29.8 x 21.7, 29.2 x 21.3
>
> These birds were regular breeders on the farm for years but I have not seen them for the past few years and am wondering if they have left the area for good or if they will return this year after the exceptional rains we have had and the very mild winter."

Egg laying takes place, therefore, from August to March in *O. nabouroup:* the clutch is two to five eggs which measure 29.2–33.5 x 20.8–22.5 and average (13) 30.9 x 21.7 mm. Macdonald (1957) notes that all specimens collected in South West Africa between 24th December 1949 and 10th April 1950 were about half way through their complete moult. The Transvaal Museum has a female specimen from Springbok, Northern Cape Province, in a similar state of moult collected on 6th September 1962. In addition that collection has specimens from Klaver, C.P.; the male taken on 4th October 1917 has the wings and tail in full moult and the unsexed bird taken the next day shows no moult at all. It appears that in *O. nabouroup* breeding and the complete moult occur simultaneously. This may be an adaptation to take advantage of the short periods in their arid habitat when feeding is very easy but more evidence than is at present available is needed to prove it.

In this connection I have received a letter from Mr. E. Joubert, a biologist employed by the South African Parks Board and working in the Kaokoveld in north-western South West Africa. He points out that *O. nabouroup* normally occurs between the 100 and 300 mm. isohyets. In the Kaokoveld most rain (what little there is) falls between January and March but that there is a spring flush of vegetation in September independent of rainfall. During the dry weather insects are scarce and berries are non-existent. The September flush of vegetation makes little difference to this situation but during the rains both are abundant. Joubert also points out that a post nuptial moult in April to August besides taking place during a time of increasing scarcity of food would occur during the period when minimum night temperatures range between 30° and 38° F. Since other birds moult successfully at very low temperatures when food is abundant I would suppose that the short period of abundant food is the reason for the tendency for moult and breeding in *O. nabouroup* to coincide.

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What is *Serinus 'flavigula'?*

by A. L. Rand

Received 20th May, 1968

In preparing the section on African canaries for the forthcoming volume of Peters' *Check-list*, it became necessary to decide on the status of the three names proposed for certain little known canaries from Abyssinia which more or less resemble one or the other of the local forms of *S. atrogularis* except for having a yellow throat patch. These are:

(a) *Serinus flavigula* Salvadori, 1888, Ann. Mus. Genova, **26,** p. 272.—Ambokarra, Shoa. (Three specimens in all, the others from Malcaghebdu and Aigaber). Described as without white on top or sides of head, and with no black band across yellow throat patch: wing 66, tail 46–49, culmen 9 mm.

(b) *Serinus collaris* Reichenow, 1905, Ornith. Monatsb., **13,** p. 146.—Karaju on River Mane, Gurra-land, [Abyssinian Somaliland] (apparently two specimens). Described as having a black bar across yellow throat patch. There is no mention of white forehead nor of white superciliaries, although Erlanger's coloured plate (*Journ. f. Ornith.*, 1907, pl. I, fig. 1, a and b) shows an indication of a white forehead: wing 64, tail 48, bill 9–10 mm.

(c) *Serinus dimidiata* Madarasz, 1912, Ornith. Monatsb., **20,** p. 45—Tale Gara Mullasa, [central Abyssinia] (apparently two specimens, another from Bisidino). Described as having a dull white forehead and a black bar across yellow throat patch: wing 65–70, tail 47–50.

Additional specimens are few and apparently no populations have been discovered. Benson collected one, listed as *flavigula*, the only specimen he saw in southern Abyssinia near Yavello where *S. a. reichenowi* was common but no *mozambicus* (*Ibis*, 1947, p. 47) and said it was easily distinguished from *reichenowi*, having greyer upperparts and a yellow throat-breast patch with a dark line across it. Commenting on this specimen, the only one available in the British Museum, Mrs. B. P. Hall and M. P. S. Irwin say it has no white superciliary line. (*Ibis* 1960, p. 504). They also mention specimens of *reichenowi* from Tanganyika with some yellow wash on underparts and the white of head.

Field Museum of Natural History has an unrecorded specimen, a male in fresh plumage, collected by A. M. Bailey at Sheik Husseim, Bali, Abyssinia on 17th December, 1926. This has a conspicuous white forehead (no superciliary) and a yellow throat-upper breast patch crossed near its posterior margin by a line of blackish brown marks forming a necklace: wing 69, tail 47, culmen 9 mm. This specimen thus has the characters of *dimidiata*. It is slightly greyer above than one Abyssinian specimen of *S. a. reichenowi* and one of *xanthopygius*. However, compared with *S. a. reichenowi* from near Addis Ababa, the only difference of moment is the presence of the yellow on throat and lack of a white superciliary.

Before discussing these birds further, it is advisable to review the characters of the two races of *S. atrogularis* occurring in Abyssinia.

(a) *S. a. xanthopygius* Rüppell.

Eritrea and northern Abyssinia, probably meeting the next in Shoa. No white in forehead nor in superciliaries; throat white, sharply bounded by the ochraceous grey of breast; no yellow; no blackish necklace: wing 69, tail 46, culmen 9 mm. (one specimen Field Museum) (Reichenow's measurements, *Vog. Afr.* 3, p. 254, are: wing 70–73, tail 50, bill 9 mm.)

(b) *S. a. reichenowi* Salvadori.

From parts of Shoa south to Kenya and Tanzania. Conspicuous white forehead and long superciliaries, throat white, bordered posteriorly by a row of blackish brown markings forming a necklace. (No yellow on throat or breast.) Wing 66–69, tail 43–45, culmen 9 mm. Three specimens from central Abyssinia. These agree in general with a series of 35 specimens from Kenya, but the latter birds show minor differences in coloration and size).

Presumably the two forms meet and intergrade or hybridize somewhere in Shoa, but the manner of such postulated meeting is not recorded.

The three yellow-throated 'species' were listed by Sclater, 1930, *Syst.*

Av. Aethiop., p. 822, as three species, with the comment that they might be races of one species, *flavigula*, or they might be mutants of *atrogularis*. Current texts list all three yellow-throated forms in a single monotypic species, *flavigula* (White, 1963, *Revised Check-list* of *African Flycatchers—Finches*—, p. 109). Hall and Irwin (*loc. cit.*) speak of them as possible intermediates or hybrids between *S. atrogularis* and *S. mozambicus* or possible aberrant *atrogularis*. They discuss this in relation to the Portuguese East African birds since described as *S. citrinipectus* Clancey and Lawson, 1960. Later, Irwin, (1961, *Durban Mus. Novit.* **6,** pp. 138–9) discusses '*flavigula*', its possible relationship with *S. dorsostriatus*, and concludes that *flavigula* is best considered a localized monotypic species, as is *citrinipectus*, although this latter exhibits variations that suggest it is polytypic. (*op. cit.*, p. 141).

The range of the yellow-throated birds '*flavigula*' must extend at least for more than 300 miles from north to south, Yavello to Shoa, and east to Gurra-land. It is apparently completely within part of the ranges of *S. a. xanthopygius* and *S. a. reichenowi* and apparently *S. mozambicus* is absent from this area.

Certain northern or central specimens are quite similar to those of *xanthopygius* except for having the yellow throat. Certain central-southern specimens resemble *reichenowi*, except for the presence of the yellow-throat and the lack of white superciliary and sometimes, apparently the lack of the white forehead.

Measurements are summarized as follows:

	Wing	*Tail*	*Culmen*
flavigula Salv.	66	46–49	9
collaris Reich.	64	48	9–10
dimidiata Madar.	65–70	47–50	
dimidiata (1 FMNH spec.)	69	47	9
xanthopygius (1 FMNH spec.)	69	46	9
xanthopygius Reich.	70–73	50	9
reichenowi (3 FMNH spec.)	66–69	43–45	9 mm.

I incline to the view that these birds are yellow-throated aberrant specimens or mutants of *S. atrogularis* in eastern Abyssinia. The northern birds are mutants of *S. a. xanthopygius* without a 'necklace', the more southern birds of *S. a. reichenowi* with a 'necklace'. This concept indicates both their inter-relationships and that to *atrogularis*. The only discordant item is that none of the yellow-throated, necklaced birds seems to have a complete white superciliary line so constant in *S. a. reichenowi*. On the other hand, if this view is correct, it indicates a relationship between *xanthopygius* and *reichenowi*, in addition to apparent allopatric distribution and the postulated intergrading. Only a field study can settle this matter. In the meantime, I suggest the following arrangement:

Serinus atrogularis xanthopygius Ruppell, 1840
synonym: *S. flavigula* Salvadori 1888

Serinus atrogularis reichenowi Salvadori 1888
synonyms: *S. collaris* Reichenow 1905
S. dimidiata Madarasz 1912

References:

Benson, C. W., 1947. Notes on the Birds of Southern Abyssinia. *Ibis*, **89**, p. 47.

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Irwin, M. P. S., 1960. The Relationship of some Aberrant African *Serinus*. *Ibis*, **102**: p. 504.

— 1961. The Taxonomic Status and Relationship of *Serinus citrinipectus* Clancey and Lawson, with notes on related members of the genus. *Durban Mus. Novit.*, **6**: pp. 138–9.

Reichenow, A., 1904. *Die Vogel Africa*, **3**: p. 254.

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White, C. M. N., 1963. *Revised Check List of African Flycatchers—Finches—*: p. 109.

A new subspecies of *Poeoptera lugubris* Bonaparte from Uganda

by STUART KEITH

Received 14th June, 1968

The Narrow-tailed Starling, *Poeoptera lugubris* Bonaparte, has previously been considered a lowland forest species, occurring from Sierra Leone eastward to the Congo and just reaching Uganda at Bwamba, a lowland forest at 2,500 feet. Recently, however, the bird has been found in higher forest in other parts of western Uganda. These highland birds differ sufficiently from the lowland birds to warrant subspecific recognition, and accordingly I name them

Poeoptera lugubris webbi, subsp. nov.

Type: Carnegie Museum No. 141,661; adult male; Impenetrable (Kayonza) Forest, Kigezi, Uganda, altitude 5,000 feet; 5th August 1960; Arthur Twomey and John Williams, collectors.

Measurement of type: Wing 98; tail 136 mm.

Description: Larger than what now becomes the nominate race. Wing measurements of nominate *lugubris* in the A.M.N.H. are: 15 males, range 89–96, average 93.13; seven females, range 84–93, average 89.3. Wing measurements of *webbi* are: 13 males, range 94–99, average 97.23; 13 females, range 90–96, average 91.92. The series of *webbi* specimens come from two forests of western Uganda, the Kibale and the Impenetrable forests. Measurements from these two places are almost identical; from the Kibale forest, five males measure: range 95–99, average 97.2; nine females, range 90–96, average 92. From the Impenetrable forest, eight males, range 94–99, average 97.25 four females, range 90–95, average 91.75.

Tail length in this species is so variable as to be useless for taxonomic purposes. For instance, tail length of the A.M.N.H. series of 15 males of nominate *lugubris* has a range of 86–128, with an average of 111.2. A single bird has a tail of 128, the next largest being 119. Apparently the long tail feathers are much subject to wear, and in some specimens some of the tail feathers have actually been broken off. I therefore consider tail measurements of little value and have not included them here.

The second character on which I base my description is a colour difference in the males. The males of *webbi* have a bluish sheen to the purple gloss of the feathers. In good light this stands out quite noticeably. Females of both races are much duller and in both races they vary a good deal as to the amount of sheen, though there is a slight tendency toward bluer sheen in *webbi*. In males there is no such variation in amount of sheen.

As shown by Chapin (1954, p. 135), *Poeoptera lugubris major* Neumann is not a valid race. It was described from the eastern Congo, and birds from this region in the A.M.N.H. collection have wings measuring 90–96. They also show no colour difference from the nominate race.

Distribution: Kibale and Impenetrable Forests, western and south-western Uganda. Specimens were collected for the Los Angeles County Museum from both forests by R. Glen, A. Williams and A. L. Archer, and for the Carnegie Museum, Pittsburgh, from the Impenetrable Forest by Arthur Twomey and John Williams. Altitudinal range of collected specimens from the Impenetrable Forest is 4,200 feet to 5,300 feet. and in addition I saw birds at 3,500 feet in June 1962. The bird is numerous in both places, as the number of collected specimens can testify, and it is curious that it has not been reported before outside of Bwamba, particularly as the Kibale Forest has been well collected. I found the bird common in a strip of forest, an outlier of the Kibale Forest, just below the New Ruwenzori Hotel, near Fort Portal, in July 1963. The birds were feeding in fruiting trees together with two other starlings, *Lamprocolius purpureiceps* and *Lamprocolius splendens*.

ACKNOWLEDGMENTS

The bird is named in honour of the late Cecil Webb of Nairobi who guided me on my first visit to these forests in 1961. I should like to thank Arthur Twomey and Kenneth Parkes, of the Carnegie Museum, and Herbert Friedmann, of the Los Angeles County Museum, for the loan of specimens on which this description is based.

Reference:

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Variation in *Falco dickinsoni* P. L. Sclater, 1864

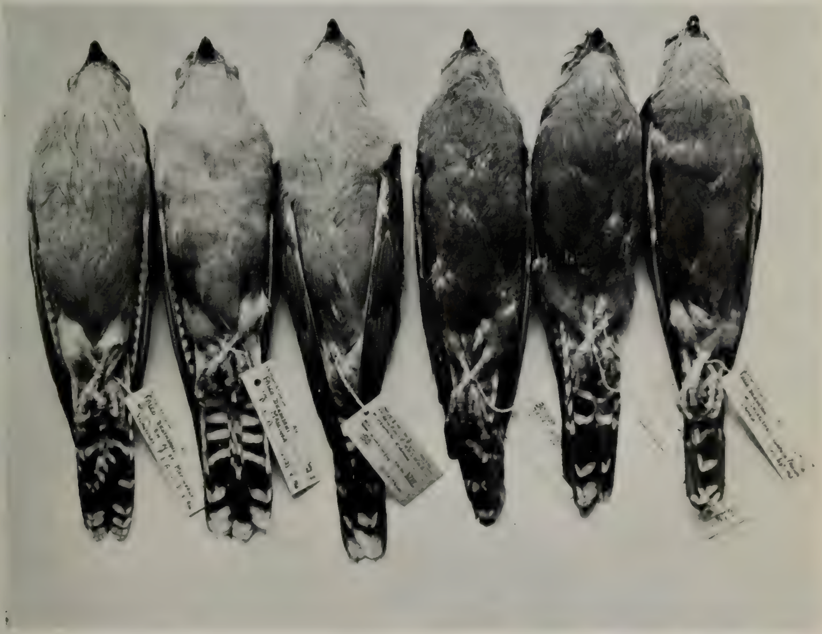
by P. A. Clancey

Received 24th April, 1968

Dickinson's Kestrel *Falco dickinsoni* P. L. Sclater. 1864: Chibasa, Shiré R., southern Malawi, is a sombre coloured falcon with a somewhat restricted range in the southern part of Africa. It is also somewhat uncommon and is not particularly well represented in most collections of African birds. It ranges from about the middle and lower reaches of the Limpopo R., in south-eastern Africa, north in the east to Pemba Island, off the East African coast, and central Tanzania, and west through Rhodesia, Malawi, Zambia, and the southern Congo to northern Botswana (mainly Ngamiland), the Caprivi Strip, northern South-West Africa and Angola. Most standard works comment on the proclivity *F. dickinsoni* has for palms, particularly Borassus palms, though this is by no means true of all populations.

During the course of a recent collecting trip to Sul do Save, southern Moçambique (April–June, 1966), I obtained two females of this falcon, which, on being compared with material from the Northern Province, Zambia, in the Durban Museum collection, were found to be much paler and greyer, less brownish, below, and whiter over the head-top, face, nape and hind neck. In order to resolve the nature of the variation detected in our limited material, I assembled in the Durban Museum a series of some 46 specimens drawn from the Transvaal, Rhodesia, Moçambique Malawi, Botswana, South-West Africa, Zambia and Angola. A careful examination of this material confirms that the species is readily divisible into well-marked light and dark forms, though with the evidence at present available, it is not possible to decide whether the variation is a geographically related polymorphism or of a type normal in polytypic species. Broadly speaking dark birds are of general distribution, from east to west, with the pallid ones restricted to the south-eastern parts of the species' range in Rhodesia, Sul do Save, and the north-eastern Transvaal.

On comparison with dark birds, light-coloured variants have the top of the head, nape and hind neck paler and whiter, less overlaid with a brownish-grey wash, and sharply demarcated from the mantle and scapulars, not merging insensibly into the black of the mantle, and with the dusky shaft-streaking finer; black of mantle, scapulars and wings duller, the feathers apically fringed with grey. Face wholly whiter. Below, much paler and whiter (breast about Pallid Mouse Gray [Ridgway (1912), pl.li], as against Gray [same pl.]), the apical fringes quite creamy, and without or with only vestigial Dark Mouse Gray panels over the flanks; thighs paler grey.



Photograph by Dennis Cleaver

Falco dickinsoni

Ventral aspect of specimens of Dickinson's Kestrel from Moçambique, Rhodesia, Zambia and Angola to show the marked variation present in this falcon.

The following are data of the material examined, arranged in light and dark coteries of specimens:

(a) *Light birds:* nine. *Transvaal:* ♀ Mokeetsi (14th August, 1922); *Moçambique:* ♀ Massinga (23rd May, 1966), ♀ 10 miles n. of Mapinhane (31st May, 1966), ♂ Zimbiti, Beira (19th January, 1910); *Rhodesia:* ♀ Birchenough Bridge (9th January, 1938), ♀ Kana R. at 18° 30′ S., 28° 30′ E. (15th August, 1950), ♂ Mbadje Pan, Shangani R. (18th July, 1963), ♂ Selukwe (30th July, 1960), ♂ Cashel (10th June, 1962) (*ex* captive).

(b) *Dark birds:* 37. *Moçambique:* two ♀♀ near Beira (25th December, 1906), ♂ Quelimane (March, 1953); *Rhodesia:* ♀ lower Pungwe R. (30th August, 1958), ♀ Ngamo, Wankie (17th January, 1958), one ♂, one ♀ 14 miles w. of Victoria Falls (18th and 23rd August, 1956); *Botswana:* ♂ Shorobe, Maun (8th December, 1962); *South-West Africa:* one ♂, one ♀ Ochimbora (3rd and 13th November, 1890); *Angola:* o Cassinga (1st May, 1960), ♂ Calai, Cuangar (28th July, 1964), ♀ Sambio (Dirico) (10th August, 1964); *Zambia:* ♂ Salujinga (10th April, 1962), 62 miles s. of Mwinilunga (17th September, 1956), ♂ Mayao, Kabompo (30th October, 1959), ♀ Kabompo (12th March, 1959), two ♀♀ 40 miles w. of Luwingu (16th April, 1954), ♀ Mumbwa (28th March, 1949), ♂ Kabulamwanda, Namwala (19th August, 1949), ♀ Namwala (17th March, 1949), ♀ Musombwe, Mporokoso (11th October, 1954), ♀ Kasama (22nd April, 1954), two ♂♂ Milima, Kasama (16th July, 1938, 26th June, 1951), one ♂, one ♀ Inchelengi, Luapula R. (September, 1963), ♀ Kalene Hill (13th April, 1962), ♀ Mazabuka (23rd May, 1949), ♀ Mukupa Katandula, Mwera Marsh (2nd February, 1953), ♂ Mbawala/Lukulu confl. (16th November, 1938); *Malawi:* ♂ Selinia, L. Malawi (August, 1935), ♂ Karonga (2nd July, 1947), ♂ Kota Kota (September, 1935), ♀ 20 miles s. of Kalonja (1896).

Mackworth-Praed and Grant (1952), in dealing with the plumage characters of this falcon, state that "The young bird is browner than the adult, especially on the under-parts". I do not find that birds in juvenal dress are very much browner over the head and below than adults. They are, however, to be distinguished by the finer barring in the tail and the greenish, not yellow, feet.

Considering that polymorphism is present in several species of *Falco*, notably in *F. rusticolus* (Vaurie, 1961, 1965), *F. eleonorae*, *F. concolor* (Meinertzhagen 1954), *inter alia*, it seems prudent to refrain from proposing any breakdown of *F. dickinsoni* into races at this stage, despite the fact that the variation seems to have a geographical basis. Further collecting of material in the south-east of the species' range may show such a step to be desirable, though the present evidence favours the view that *dickinsoni* is polymorphic like some of its congeners.

ACKNOWLEDGMENTS

Forty-six specimens of *F. dickinsoni* were examined collectively in the Durban Museum in furtherance of this research project. To augment the small Durban series, material was borrowed from the following institutions: South African Museum, Cape Town (through Prof. J. M. Winterbottom), Museu Dr. Alvaro de Castro, Lourenço Marques (Dr. M. Corinta Ferreira), the Transvaal Museum (O. P. M. Prozesky), the National Museum of Rhodesia, Bulawayo (M. P. Stuart Irwin), and the Instituto de Investigação Cientifica de Angola, Sá da Bandeira (Dr. A. A. da Rosa Pinto). To all those mentioned I tender my sincere thanks.

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A hybrid Ring-necked Pheasant x domestic fowl

by James Harrison

Received 1st April, 1968

Hybridisation between *Phasianus colchicus* L. and the domestic fowl have been recorded on many occasions; such cases can, in fact, be regarded as commonplace. The sporting journals and country magazines have often a brief note of such and quite frequently the account is illustrated by a photograph.

The present instance of this hybrid relates to two hens belonging to Mrs. Haggie of Thirsk, Yorkshire, which were visited by a stray cock pheasant, and the actual act of mating was observed.

The two hens, both birds of the year and 'first layers' were, it is believed, a mixed strain of Rhode Island Red and Light Sussex; they can be regarded as healthy young stock and reproductively active. This latter point is of importance in that it is a reasonable assumption that both hens would at least have had a normal average fertility and the progeny, all things being equal, a normal average capacity to survive.

It is, of course, well known that in intergeneric hybridisation both fertility and the survival rate of the progeny are quite often seriously affected. These points are well illustrated by the present case; the two hens concerned produced between them 40 eggs, and of these only 13 hatched, although one must set against this overall statement the fact that of the third setting of 12 eggs, none hatched owing to broody trouble, but at the same time it is believed that all the eggs were infertile. On the morbidity side there is the hard fact that of the 13 that did hatch, only three survived into their first year plumage.

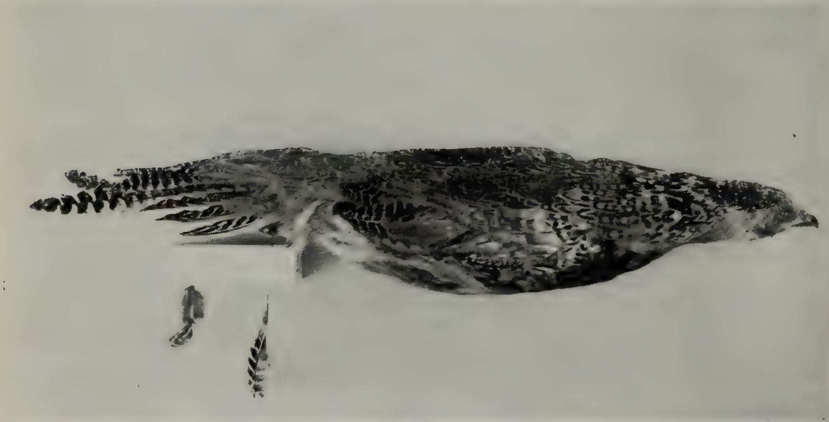
The survivors comprised two cocks and one hen, and the fate of these was as follows:— one male escaped, the second died of coccidiosis (*fide* Mr. D. V. Sinclair, M.R.C.V.S.) while the hen, the subject of this communication, succumbed to a widespread fatty degeneration.

The two cocks, so I am informed by Mr. Sinclair (*in litt.* 19th March, 1968) were identical in type; neither of course had lived long enough to assume the full first winter dress. What the overall incidence of this particular cross is it is difficult even to hazard a guess, and whether it is fertile in either direction is again perhaps unknown. When one remembers that the domestic fowl is kept, one would imagine, by every gamekeeper in the country and that keepers' cottages are invariably located on the game reserve one can only be somewhat surprised that the hybrid is not even more numerous than it is known to be.

The male hybrid was a large bird, certainly larger than the average cock pheasant, and its stance was perhaps nearer to that of a domestic fowl than a pheasant, while the form and carriage of the tail was also much more that of a fowl than a pheasant, being shorter and fanned out.

The heavier build is also apparent in the skin (Fig.) during the preparation of which heavy deposits of fat were found over the abdomen, on the thighs and rump, and at the root of the neck. These are in fact the usual areas in any bird where depot fat is found. Although heavy, the fat deposition was not quite as gross as it is in sterile intersexes in pheasants, but it is perhaps not without some significance that the colour of this bird was in effect, a very similar shade of buffy-yellow, so often found in the 'cocky hen' pheasant.

The comparative weights are indicative of the degree of change shown by the hybrid towards the domestic fowl:—



Photograph by Dr. Pamela Harrison

Hybrid pheasant x domestic fowl, ♀ 1st year, showing 'twisted feather' mutation.

Hybrid: 2213 g.; *hen pheasant:* 1021 g. (average).

It should be noted that although the specimen is a female there was nevertheless a red field of bare, or almost bare skin around each eye, suggesting that there was some disturbance of the accepted pattern of the secondary sexual characters towards the intersexual state. The heavier build of this bird is also very apparent in the size of the tarsi and toes, which incidentally were grey as in the pheasant, and in the somewhat heavier bill.

One cannot but wonder whether this bird, had it survived into the autumn to assume its full, first winter plumage might not have shown more decisive signs of intersexuality, particularly as, even at this stage, it did show some tendencies towards maleness.

The general colour has already been described as buffy, in fact it was not dissimilar, broadly speaking, to the Buff Orpington breed of fowl. Colour matching in Maerz and Paul, *Dictionary of Color* it is ventrally nearest to Titian Gold, (Plate 13, no. 11) in its brightest areas on the breast, while over the belly it is much paler. Dorsally the ground colour is much the same, brightest on the shoulders and upper tail-coverts. The markings from the crown to the rump are pretty typically pheasant, consisting of arches, which are somewhat elongated, notches and arrowheads in dark sepia. These characters are shown in the photograph.

Mention must be made of a very interesting feature shown by some of the feathers (see Fig.) two of which are shown isolated from the skin and consist of torsion amounting to as much as 360° round the long axis of the quill. This can be seen in the tail feathers *in situ*, and in the broken tail feather shown separately, as well as in a body feather; the effect is that of having in view at one and the same time both the dorsal and ventral surfaces of the feather so affected.

It has been shown by Huxley and Bond (1934) that in a gynandromorphic pheasant the growth rate of the male and female half of such a tail feather differs. The effect of this is that the feather is forced to bend laterally during growth along its long axis with the result that the tips diverge outwards from the mid-line of the tail, demonstrating that there exists a sex growth rate differential.

One can postulate in the present case the operation of a species growth rate differential, and that this is so marked that in the process of growth the feather has no choice other than that of making a series of spiral rotations amounting to 360° around the long access of the quill.

It may well be questioned as to why every feather is not similarly affected. In this connection it must be remembered that growth is under the control of hormones, and that the elaboration of these is not necessarily even and uninterrupted. Harrison (1932) in a study of a series of 19 hen pheasants assuming male plumage has indicated that the condition may be phasic, and that it can occur even in quite young, and as yet, not even fully grown poults.

Discussion:

Intergeneric hybrids are invariably of much interest in that, in addition to the usual intermediate characters which are so often found, other characters may become evident the significance of which is not always apparent. Indeed the characters found are not invariably intermediate, as in the present case where *e.g.* the size inclines far more to one parent than the other.

Hybridisation can also affect normal function very adversely as we have already seen, and in this respect anything but beneficial effects upon the recipient of the mixing of the genes takes place, and yet, as we know, speciation can sometimes be brought about by hybridisation.

The interesting 'twisted' feather mutation has already been fully discussed, but there are still one or two noteworthy points exhibited by this specimen. One of these is the general colour of the bird. This pale buffy colour is one which I have already mentioned as that seen commonly in the so-called 'mule' pheasant, an intersexual state arising from failure of the ovarian secretion from one cause or another. In the case of the present specimen it must, of course, still be regarded as immature, *i.e.* not reproductively active, a view fully substantiated by the histology of the ovary. I believe that had it lived longer the ovary would, in all probability, not have developed into a functional organ, and that this bird would have become an intersex. The normal balance of the endocrine system is a very delicate one, and is easily disturbed in the process of hybridisation. The probability that this disturbance of hormone function was operative in this case is strongly suggested by the presence of the bare red skin round each eye which this bird showed, for this as is well known, is a male character of the covert pheasant.

SUMMARY

An intergeneric hybrid between a male Ring-necked Pheasant and a domestic fowl is described.

The occurrence of an associated mutation is described, and discussed in the light of the hormone control of growth and the resulting disturbance hybridisation has occasioned.

ACKNOWLEDGMENTS

My principal indebtedness is to Mrs. Haggie who was kind enough to send me the specimen, to Mrs. Carl Seton-Browne who advised me in the first place of the existence of the hybrid family, and to Mr. D. V. Sinclair, for much useful information.

Dr. W. G. Storey very kindly prepared and reported upon the histological material, which included the vital slide confirming the anatomical sex of the bird as a female, and for slides of other organs which determined its death from the widespread fatty degeneration.

My thanks are also due to Dr. Pamela Harrison for the photograph of the prepared skin. Discussion with and comments by Dr. Jeffery Harrison are again acknowledged with gratitude.

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The status of *Monticola pretoriae* Gunning and Roberts, 1911

by P. A. Clancey

Received 6th May, 1968

Monticola pretoriae Gunning and Roberts, 1911: Pretoria, Transvaal was proposed as specifically distinct from *Monticola brevipes* (Waterhouse), 1838: 'Tans Mt., near Walvis Bay, South-West Africa, in having the top of the head uniform slate-blue, with no white eyebrow, and the outer edge of the outermost rectrix with a more extensive brown mark. Until very recently, *pretoriae* has received little or no support from other workers. Roberts himself (1940), placed it as a synonym of *M. b. leucocapilla* (Lafresnaye), 1852: no locality, following Bangs (1930), which view was adopted by Vincent (1952) and Clancey (1966); Ripley (1964), on the other hand, placed it in the synonymy of *M. b. brevipes.* Other recent authors, including McLachlan and Liversidge (1957), Mackworth-Praed and Grant (1963), *inter al.*, have denied the existence of subspecifically significant variation in the Short-toed Rock-thrush. Very recently, Farkas (1966) resuscitated *pretoriae* as a form specifically discrete from *M. brevipes*, in so doing considering Lafresnaye's *leucocapilla* a synonym of *brevipes* and not an earlier name for *pretoriae*. In treating *pretoriae* as a full species, Farkas has already been followed by White (1967) and other workers. As it is clear that the *pretoriae* of Farkas is simply the *leucocapilla* of Bangs, Roberts (1940), Clancey and Ripley, I have gone into this question afresh with the pooled specimen resources of both the Transvaal and Durban Museums in an endeavour to ascertain its true status.

At the outset it may be stated that *M. pretoriae* is simply a well-marked race of *M. brevipes*, and there can be no question of according it independent specific status. The male of *M. b. pretoriae* differs from that of the nominate race in having the top of the head, nape and hind neck coloured like the mantle and scapulars. The feathers of these parts are not greyish-white over the basal three-quarters, only the tips bluish-grey (in nominate *M. brevipes* the wearing off of the blue-grey apices to the feathers results in the form assuming a white dorsal surface to the head, nape and hind neck in worn dress), which tipping and the mantle and scapulars are more brownish tinged, less clear blue-grey (Mouse Gray [Ridgway (1912)], as against Deep Neutral Gray). Face more or less plain mousy grey, not black, over the lores and auriculars sharply contrasted against the head-top as in *M. b. brevipes*. Below, with grey of throat paler, and orange of rest of ventral surface a little more saturated. In the wings somewhat paler and browner, less black, and the pale feather edges buffy rather than white. Tail darker. In the case of the female, *M. b. pretoriae* is darker and browner, less greyish over the upperparts; face also darker. Below, with the throat and lateral neck surfaces more heavily clouded and streaked with brown, the white mesial streak over the fore-throat laterally constricted, and the rest of the underside is more saturated and ochraceous, the dusky speckling heavier.

There appears to be little in the nature of a valid size difference between *M. b. brevipes* and *M. b. pretoriae*, though the former ranges larger in size (wings of ♂♂ 103–108, as against 100–105 in *pretoriae*), and the bill is a trifle longer: 24–27+, compared with 25–26 mm. in ♂♂ of *pretoriae*.

That *pretoriae* is no more that a race of *brevipes* is confirmed by two ♂♂ intergrades from the Kuruman district of the northern Cape in the Durban Museum. Another ♂ examined from Kosterfontein, Transvaal, well within the range of *pretoriae*, shows the influence of nominate *brevipes* in that some of the head-top feathers are greyish-white sub-apically. The range of *pretoriae* is from Griqualand West to the Orange Free State, and the highveld of the Transvaal (north to about Tzaneen). It has also been recorded from Stegi, in the Lebombo Mountains of Swaziland, but not from Natal, *contra* White (1967). This range agrees more or less exactly (with the exclusion of all reference to Botswana) to that given for *M. b. leucocapilla* by Roberts, Clancey and Ripley, *loc. cit.*, the status of which name must now be resolved.

Petrocinela (*sic!*) *leucocapilla* Lafresnaye, 1852: no locality but = "Afr. Mer. Betzonanas", *vide* Bangs, *loc. cit.*, which = Bechuanaland, according to Vincent (1952). The Short-toed Rock-thrush has only been recorded from Tshabong and Gaberones in the former Bechuanaland Protectorate (now Botswana) according to Smithers (1964) and Winterbottom (1966), but occurs commonly immediately to the south of that territory in the Bechuanaland district of the northern Cape. The type-locality can be localised in this region, and I here formally propose

north of Kuruman, northern Cape,

as the restricted type-locality of *P. leucocapilla* Lafresnaye, 1852, which name is now lodged in the synonymy of *M. b. brevipes* (Waterhouse), 1838. One would expect that the name *leucocapilla*, white-capped, could only have been applied in the first instance to an example of nominate *M. brevipes* in worn plumage and not to one from the south-eastern populations of dark-headed birds (*pretoriae*), but Bangs informs us that the type is not white-headed. It is probably in freshly moulted dress, in which case the white dorsal surface of the head and neck in *M. b. brevipes* would be obscured by the blue-grey apices to the new feathers. Also by formally restricting the type-locality of *leucocapilla* to the northern Cape districts lying to the north of Kuruman, the name is associated with the western rather than the south-eastern populations.

The status of *M. b. kaokensis* Macdonald, 1957: Kamanjab, north-western South-West Africa, is highly equivocal, and most recent workers have placed it in the synonomy of *M. b. brevipes*, the sole major exception being Traylor (1963), who used the name for the populations occurring along the arid coast of south-western Angola. White (1962) accepted the stated race, but later (1967) referred it to the synonymy of *brevipes*. 'Tans Mountain, near Walvis Bay (the type-locality of *brevipes*) and Kamanjab (the type-locality of *kaokensis*) both lie in much the same low rainfall region of north-western South-West Africa, and are most unlikely to support discrete races of a bird such as a rock-thrush, which is not overtly plastic. This view is confirmed by the work of others. Judging by Winterbottoms' comments (1964; 1966) on *kaokensis* topotypes, this name is correctly placed as a synonym of *M. b. brevipes*, in which case a new name is required for the Angola coastal birds if they do in fact show good characters of their own.

Currently, *M. brevipes* should be admitted as having two races: nominate *brevipes* and *pretoriae*, with the names *leucocapilla* and *kaokensis* placed as synonyms of the former. *M. pretoriae* is not specifically discrete from *M. brevipes*, the opinion of Farkas notwithstanding.

ACKNOWLEDGMENT

For the loan of material of *M. b. pretoriae* I am particularly grateful to Mr. O. P. M. Prozesky, Transvaal Museum, Pretoria. Several specimens examined were actual paratypes of this subspecies.

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A new race of the Naked-faced Spider-hunter *(Arachnothera clarae)* from Luzon

by GODOFREDO L. ALCASID AND PEDRO GONZALES

Received 6th May, 1968

The Naked-faced Spider-hunter (*Arachnothera clarae*) is an endemic Philippine species. There was confusion in the earlier literature concerning the correct name of this species; *clarae* evidently has priority. Rand in his recent revision of the Nectariniidae for Peters' *Check-list of Birds of the World* (1967, 12, Cambridge, Mass.) and in his earlier papers with Rabor (1957, *Fieldiana: Zoology*, 42: 13–18; 1960, *Fieldiana: Zoology*, 35: 225–441) recognized three races: an eastern Mindanao population, *A. c. clarae* Blasius; a central and western Mindanao one, *A. c. malindangensis* Rand and Rabor; and one from Samar and probably Leyte, *A. c. philippinensis* Steere. The two Mindanao populations differ chiefly or only in colour. *Arachnothera clarae philippinensis* is unique in having a naked forehead and a wash of green on the underparts.

Samar and Leyte birds have sometimes been considered a separate species on the basis of their naked foreheads but the discovery of a Luzon population, described below, with forehead feathered like the Mindanao birds makes it unlikely that more than one species is involved, since the population with naked forehead is geographically between those in which that area is feathered.

The Luzon race of this spider-hunter was discovered during our work on that island with the Bird Banding Project. We name it:

Arachnothera clarae luzonensis, subsp. nov.

Type: No. 4133, Philippine National Museum; adult male; Dumagat, Pakil, Laguna, Luzon, Philippines; 25th May, 1966; collected by M. Celestino and J. Ramos.

Diagnosis: Forehead feathered. Differing from the Mindanao forms by having the back more brownish and the grey-brown of the breast darker. There seems to be no size difference.

Description: The type has the bill long, curved and pointed and burnt umber to black in colour; crown and back drab olive-green, tending to brownish on the rump, and to raw sienna on the tail; decomposed edges of the primaries and secondaries ochraceous yellow, tending to brown in the middle and buff on the inner edges; area behind the wing-bend brown; naked skin on the face flesh coloured; chin and throat grey, touched with brown; breast feathers edged with grey and with brown shafts and light brown tips to give a mottled appearance; vent and under tail-coverts light brown washed with olive; flanks olive grey; legs light brown, feet vandyke brown.

Measurements of the type: Total length 159 mm. wing 85, tail 46, culmen from gape 45, culmen from back edge of nostril 32, tarsus 22.

Material: Two specimens other than the type are in the Museum's collection: NMO 4134 from Balian, Laguna, collected 9th June, 1965 by N. Icarangal, and NMO 4135 from the type locality. Both specimens are juvenal females. They differ from the type by having the plumage generally darker.

Habitat: Found in virgin forest and in clearings planted with bananas and abaca. They seem to rest in the forest, where they are hard to see among the foliage. They descend to feed on the banana or abaca inflorescenes. According to the natives they have been seen in the lowlands among coconut groves, where they feed among the flowers.

Oxpeckers *Buphagus* spp. on game animals at night

by R. J. Dowsett

Received 9th May, 1968

INTRODUCTION

The two species of oxpecker, the Yellow-billed *Buphagus africanus* Linn. and the Red-billed *B. erythrorhynchus* (Stanley), feed entirely on ticks and flies on the hides of game and domestic animals or on wounds on these animals. Oxpeckers also sun themselves and copulate on the bodies of their hosts, and line their nests with their hair. Discussion is to be found in Attwell (1966) and Moreau (1964). What apparently has not been appreciated hitherto is that the symbiosis exhibited by these birds is even more extensive in that some oxpeckers at least roost on their hosts at night.

Previous authors have mentioned that oxpeckers roost colonially in trees, holes in trees and reed beds (*e.g.* McLachlan and Liversidge, 1957 and van Someren, 1951). However, in July 1966 I received a report from two colleagues in the Zambia Game Department, W. R. Bainbridge and R. D. Rohwer Junr., of oxpeckers on buffalo *Syncerus caffer* Sparrman at night. This was near M'fuwe in the Luangwa Valley National Park in Zambia, about 13° 03′ S., 31° 47′ E., and was at about 0300 hours on a pitch black night. The species of oxpecker was not determined and unfortunately the behaviour of the birds was not noted, as the observers did not realise the value of this record. Consequently I have searched specially for oxpeckers on game animals at night in the Luangwa Valley National Park and adjacent areas.

OXPECKER NOCTURNAL HOST PREFERENCES

Between August 1966 and December 1967 I observed oxpeckers frequently on buffalo at night but never on other game animals. On all but one occasion that I was able to identify the oxpeckers specifically they were *B. africanus*. The one record of *B. erythrorhynchus* was of two birds, and at least ten others unidentified, on a large herd of buffalo in August 1966. By day *B. africanus* is much the commoner species on buffalo in the Luangwa Valley (personal observation, and see Attwell, 1966). I have never found nor heard of oxpeckers roosting in trees in that area, although they may do so unnoticed.

The bulk of the oxpeckers in the Luangwa Valley are to be found by day on buffalo, hippo *Hippopotamus amphibius* Linn., black rhino *Diceros bicornis* Linn., zebra *Equus burchelli* Gray, impala *Aepyceros melampus* Lichtenstein and kudu *Tragelaphus strepsiceros* Pallas. Of these species more than 20% of the groups encountered by day will have oxpeckers in attendance. Buffalo, hippo and impala are the only ones to be seen commonly at night; hundreds of each species have been observed, but oxpeckers have been found only on buffalo. It should be noted that the many oxpeckers that utilise the abundant hippo and impala are nearly all *B. erythrorhynchus*. The host preferences of the two species of oxpecker are not fully understood (Attwell, 1966 and Dowsett, in prep.), but possibly nocturnal habits differ. Counts of oxpeckers by day and by night on the same groups of buffalo suggest that on small groups up to half the numbers of oxpeckers seen by day are present at night, while a smaller proportion of the oxpeckers on large herds can be found at night.

Correspondence with observers in other parts of Africa suggests that oxpeckers are only occasionally to be found on game animals at night. Recent development of many game reserves and National Parks, and the culling of game animals at night in some areas, has resulted in more nocturnal travelling by game department staff. Nonetheless, in spite of much time spent hunting hippo in the Murchison Falls National Park in Uganda I. S. C. Parker has only once seen oxpeckers at night, namely about 12 on one of a group of a dozen giraffe *Giraffa camelopardalis* (Linn.). These would probably be *B. africanus*, the only species recorded from that area (Attwell, 1966).

In Tanzania, in the latter part of 1967, Dr. H. F. Lamprey found oxpeckers frequently on a small group of buffalo at night near Banagi, Western Serengeti.

In Rhodesia there are a number of records of oxpeckers at night from the Wankie National Park. J. L. Anderson has seen them once on a moonlit night on kudu. B. Austin has seen them during counts of game visiting waterholes during times of full moon. He has noted them on giraffe, buffalo and eland *Taurotragus oryx* (Pallas) and further tells me that O. Bristow has seen them at night on his domestic herd of eland at Beit Bridge. In the Zambezi Valley V. J. Wilson has observed oxpeckers on black rhino before first light. It is not known to which species of oxpecker these records refer.

OXPECKER NOCTURNAL BEHAVIOUR

In the Luangwa Valley I have seen oxpeckers on buffalo only on dark nights, but this may be because buffalo can then be dazzled more easily with a spot-light, and thus observed closely. The Wankie National Park reports were at times of full moon. I have seen oxpeckers on buffalo in any type of vegetation, from dense *Combretum obovatum* thicket to open tree savanna. I have seen them at times throughout the night.

Although buffalo are very active and feed extensively at night, the oxpeckers seem generally inactive and are probably roosting. I did once see two *B. africanus* feeding actively on a buffalo at 2000 hours on a dark night, but the birds feed extensively by day and there seems no reason why they should have to feed at night also. Parker reports that when a light was shone onto oxpeckers on a giraffe they appeared to wake up, seemed startled and some moved round to the dark side of the animal. They made no attempt to fly away. Lamprey considers the birds seen by him on buffalo were not feeding, and Austin says birds seen by him showed little activity and never fed nor alighted from their hosts to drink at waterholes. Usually as soon as a light is shone on oxpeckers on buffalo at a range of only a few yards they adopt their 'Penguin' attitude (see van Someren, 1951) often calling loudly. Watched at longer ranges they merely cling to the side of the buffalo and appear to be inactive.

Two former colleagues D. S. G. Macleod and I. P. A. Manning, whilst employed on game culling in the Luangwa Valley, reported that oxpeckers had been found on the carcasses of buffalo killed at night by a brain-shot while dazzled by a lamp. The oxpeckers were disinclined to leave the bodies of the buffalo and one was caught easily by hand when dazzled with a torch. The observers considered the oxpeckers had been on the buffalo when shot, staying on the fallen animals, and not flying onto the carcasses afterwards. Unfortunately changes in cropping operations in the area prevented further study.

DISCUSSION

It is clear that oxpeckers will not infrequently roost on game animals, especially buffalo. As Capt. C. R. S. Pitman has pointed out (*in litt.*) it might be more to the advantage of oxpeckers to stay with a wide-ranging species such as the buffalo, rather than go to roost and then have to search for the animals again next day. Hippo, on the other hand, return to the same stretch of river or lagoon after feeding on land at night, and the same or nearby groups can be found readily by oxpeckers the next day. Similarly there is no need for oxpeckers to roost on impala (presumably less comfortable than in a tree) because these antelope are plentiful on the ground and easy to find, although a particular group might be anywhere within a square mile. This presupposes a preference for a particular species of host by the individual oxpecker for which there is evidence (Dowsett, in prep.). Roosting on animals at night might be expected to be more common in areas where game is sparse. Although Pitman (*in litt.*) says this habit is not unexpected, it is surprising it has not been remarked upon before. In the past, when buffalo were widespread, hunters must often have heard those animals at night and hunted them then. Oxpeckers call freely when buffalo are disturbed, yet none of my colleagues in the Zambia Game Department nor professional hunters in the Luangwa Valley, all with many years hunting experience, had seen oxpeckers or heard them on game at night. It may be this is a recently acquired habit.

ACKNOWLEDGMENTS

I should especially like to thank Capt. C. R. S. Pitman for much advice and for making enquiries on my behalf. I am also grateful to those who have supplied information and whose names are mentioned in the text, and to Messrs. R. I. G. Attwell, C. W. Benson and A. D. Forbes-Watson. Mr. R. E. Moreau and Capt. Pitman have kindly commented on a draft of this paper.

SUMMARY

Buphagus africanus and *B. erythrorhynchus* occasionally roost on game animals at night. Buffalo are especially favoured, and giraffe, kudu, eland and black rhino are also recorded as nocturnal hosts. Hitherto oxpeckers have been considered to roost entirely in trees or reed beds. They have only once been noted feeding at night. Roosting on an animal that wanders widely would obviate the need to search for hosts anew each day.

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CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

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DINNERS AND MEETINGS FOR 1968

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The six hundred and fifty-third meeting of the Club was held at the Rembrandt Hotel, London, on the 15th October, 1968.

Chairman: Dr. J. F. Monk

Members present: 19; Guests 3.

Possible changes concerning the meetings of the Club and publication of the *Bulletin* were explained by the Chairman and discussed by the members. After further deliberations in the light of this discussion, the Committee will inform members of any change which it may recommend.

Distributional notes on some Neotropical swifts

by Charles T. Collins

Received 2nd August, 1968

In the course of my studies of Neotropical swifts several new or previously overlooked records have come to light which add to the scanty information available for four rare or uncommon species. These records are summarised below.

Cypseloides cryptus Zimmer

An unrecorded specimen in the British Museum (Natural History), taken in Ecuador, represents the first record of *C. cryptus* for this country. It had been previously identified as *C. fumigatus*, probably prior to the description of *cryptus* in 1945. The specimen, showing early wing moult, unfortunately lacks any further information as to date of capture, sex, or exact locality. *Cypseloides cryptus* is already known from Peru, Colombia, Venezuela, and Guyana in South America and several localities in parts of Central America (Eisenmann and Lehmann, 1962).

Cypseloides cherriei Ridgeway

Two previously unrecorded specimens from Costa Rica in the British Museum (Natural History) represent the third and fourth specimens from this country. Both specimens were collected by C. F. Underwood on the Volcan de Irazu on 9th August, 1898. They are in worn plumage and show early wing moult. Originally described from two specimens from the Volcan de Irazu in 1893 this rare swift was not recorded again until 1945 and then from north-eastern Colombia (Zimmer, 1945). Subsequently, in 1948 three specimens were taken at Rancho Grande in northern Venezuela (Beebe, 1949) and eleven more have been collected there since then. However, there have not been any further records from Costa Rica or elsewhere in Central America. A full review of this species is being prepared (Collins, in prep.).

Chaetura chapmani Hellmayr

A single individual of this species, presumably of the nominate race, was mist-netted and released in Portachuelo Pass near the Rancho Grande Biological Station in Aragua, Venezuela, by C. Brooke Worth on 13th March, 1968. As two other species of *Chaetura* were netted at the same time and Dr. Worth had had previous experience with *chapmani* both in flight and in hand in Trinidad, when accompanying the author, there can be little doubt as to the accuracy of the identification. This record, only the fourth for Venezuela, fills an apparent gap in the distribution of this species in northern Venezuela, the two previous records being substantially to the east (Sucre) and west (Zulia) of Portachuelo Pass (Collins, 1968).

Chaetura andrei meridionalis Hellmayr

A single individual of this swift in the U.S. National Museum was collected near Rancho Grande, Aragua Venezuela, on 13th September, 1952, by Ira N. Gabrielson. It is the first record of this migrant subspecies from Venezuela and the latest date for this form from north of the equator. Known to breed from central Brazil to northern Argentina (Sick, 1959), *meridionalis* has been previously recorded as a trans-equatorial migrant in extreme northern Brazil (Pinto, 1966), Surinam (Haverschmidt, 1968), Colombia (Darlington, 1931), and Panama (Rogers, 1939).

Acknowledgments

I am indebted to the curators of both museums for their hospitality while I was examining their collections. My work has been generously supported by grants from the Frank M. Chapman Memorial Fund of the American Museum of Natural History. I would also like to thank Dr. C. Brooke Worth for permission to report on his field observations, and Eugene Eisenmann and Richard K. Brooke for their comments on the manuscript.

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On the name of a race of *Buphagus erythrorhynchus* (Stanley)

by P. A. CLANCEY

Received 24th April, 1967

In most recent discussions in the periodic literature on the subspecies of the Red-billed Oxpecker *Buphagus eryhrorhynchus* (Stanley) of Ethiopian Africa, the name *Buphagus erythrorhynchus caffer* Grote, 1927: Palala R., border of Waterberg and Potgietersrus districts, Transvaal, has been used for the populations which range from the Republic of South Africa, northwards through the interior of the continent to northern Tanzania and Kenya. The fact that *caffer* is antedated by the much earlier *Buphaga Africanoides* A. Smith, 1831: Natal (*vide South African Quarterly Journal,* No. V, October, 1831, p. 12) seems to have been overlooked hitherto by workers.

There is no doubt that Smith's *B. Africanoides* is correctly applied to this species of oxpecker, as the original description is diagnostic. The bill is described as being between crimson and scarlet in colour, the legs and toes as black, and the eye-wattles as yellow. Smith comments that it "inhabits the country about Natal, and is commonly seen picking insects from the backs of cattle".

The Olive Weaver-finch, *Nesocharis ansorgei ansorgei* in Uganda

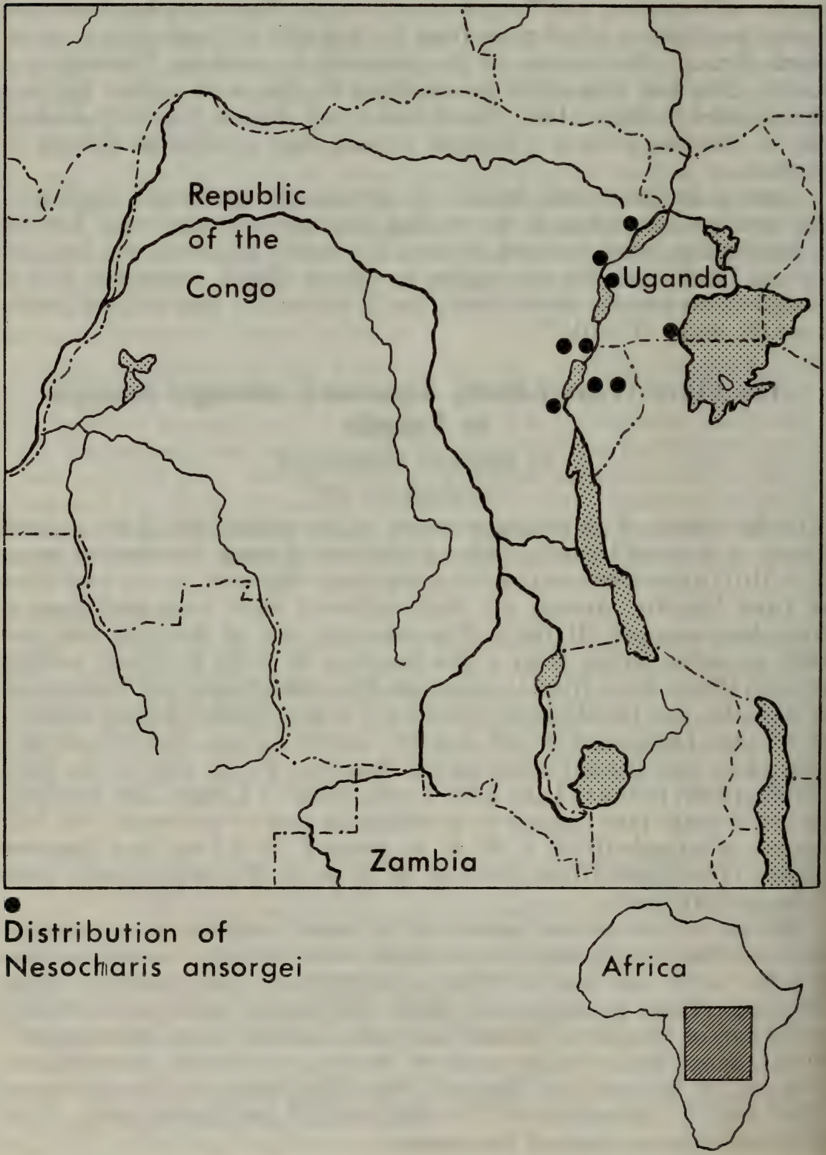
by HERBERT FRIEDMANN

Received 20th June, 1968

In the course of an extensive survey of the animal life of the isolated forests of western Uganda, under a National Science Foundation grant (GB-5107) a few weeks were spent in the Sango Bay area, on the west shore of Lake Victoria. Among the birds collected there were specimens of *Nesocharis ansorgei* (Hartert). The nominate race of this little bird had been recorded earlier from a few localities in Toro Province, western Uganda [Wimi River (type locality), the Bugarama Valley and Hakitengya in Bwamba, and the Mpanga (Kibale) and Kibera (upper Kibale) forests]; in Rwanda (Akanyaru River), and the eastern Congo, from the eastern Ituri (Kilo and Irumu) south to the Rutshuru Plains, and to the Kivu District (Idjwi Island in Lake Kivu, Luofu, south of Katana, and Tshibati). Its entire range thus appears to lie within an area of not much over four degrees of latitude (from 1° 50′ N. to about 2° 30′ S.) and less than two degrees of longitude (from about 28° 40′ E. to 30° E.), at altitudes of from 3,000 to 6,500 feet.

Because of the compact nature of its limited range it is surprising to find now that this bird also has a remote and completely isolated population far to the east, and involving a geographical discontinuity of some 170 miles. Three examples, two males, one female, all in non-breeding condition, of the Olive Weaver-finch were collected in the Malabigambo Forest, Sango Bay, 40 miles south of Masaka, on the west shore of Lake Victoria, on 30th and 31st January, 1968. This locality, at an elevation of 3,800 feet, is approximately 170 miles east of the nearest part of the previously known range of the species.

This bird inhabits marshy places on the forest edge but does not go into the forest itself. At Tshibati, Ruth Chapin (1959, pp. 230–232) found it to be common in well-watered areas of marsh vegetation and along bush and tree bordered streams. Moreau (1966, p. 82) included the species in his list of "montane" birds, although it nowhere ranges to very high altitudes, but also nowhere does it occur at very low elevations.



●
Distribution of
Nesocharis ansorgei

At Tshibati the bird was found to feed on the seeds of a yellow-flowered composite, *Melanthera brownei*, to a degree that led Mrs. Chapin to comment as follows: "It is unusual to find a bird that is addicted almost exclusively to one food plant, but examinations of crops and stomachs of numerous specimens reveal that in our area, *N. ansorgei* eats little except the seeds of . . . *Melanthera brownei.* The minute seed is cracked and most of its black husk is discarded. The crop of one adult female contained almost 1,000 of the kernels of these tiny seeds . . . No insect remains have ever been discovered in the numerous stomachs that have been examined . . ." Our Sango Bay birds also had many small crushed seeds in their stomachs, and while I have not been able to have them identified, I am informed by Mr. R. J. Gustafson that *Melanthera scandens* (of which *brownei* is now considered a synonym) occurs throughout Uganda. So far as known, this weaver-finch is largely, if not wholly, graminivorous, but in Cameroun Bates once saw a pair of them going over a good part of the trunk of a tree, apparently examining the bark as if they were hunting for minute insects. At least he thought there were no seeds to be looked for there.

Through the kindness of the American Museum of Natural History it has been possible to compare our Malabigambo specimens with ten (five of each sex) from Tshibati, west of Lake Kivu. No differences in coloration or in dimensions are discernible between them, and hence there is no need to raise any question as to the possible racial allocation of the Sango Bay population, which are typical *ansorgei.*

Inasmuch as few studies have been made of this bird it may be opportune to correct two erroneous statements in the earlier literature. Jackson (1938, p. 1518) wrote that Emin had obtained, many years earlier, examples at Meswa and at Buguera, but these records refer, not to this species but to its relative, *Nesocharis capistrata.* Van Someren (1922, p. 156) stated that *ansorgei* had been collected "on Ruwenzori", but this is a slip for "collected by the Ruwenzori Expedition", which did obtain specimens in the Kibale Forest, Toro, Uganda, on the way to Ruwenzori, but not on the mountains themselves (Ogilvie-Grant, 1910, p. 295).

In extreme western Africa there are two closely related races, until recently usually considered as forming a separate species, *Nesocharis shelleyi;* typical *shelleyi* known only from the island of Fernando Poo and Mt. Cameroon, and *bansoensis* known from the highlands of Cameroun (Banso, Kumbo, Oku, Manenguba Mountain). These two races resemble *ansorgei* of western Uganda and eastern Congo in general coloration, but are both smaller, with shorter tails and more slender bills. These characters are hardly specific in value, and it seems that *shelleyi* and *bansoensis* are to be treated as conspecific with *ansorgei*, as has already been proposed by White (1963, pp. 185–186). The ranges of these two subspecies are geographically even more limited than was that of *ansorgei* prior to the discovery of the Malabigambo population. The total range of *shelleyi* comprises an area of less than two degrees of latitude (3° 20′ N., to 4° 12′ N.), and not quite one of longitude (8° 30′ E. to 9° 08′ E.); that of *bansoensis* involves about one and a third degrees of latitude (5° N. to 6° 20′ N.) and one of longitude (9° 50′ E. to 10° 59′ E.). In other words, each of the races of *ansorgei* has a very restricted range, a situation that makes the now known discontinuity existing within that of typical *ansorgei* all the more unusual. It suggests that additional material of the Malabigambo population should be carefully studied for slight, but significant average subspecific characters. If the isolation of this eastern segment of the species has been of sufficient duration, one might expect some incipient differentiation to have taken place.

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The nest and eggs of *Arachnothera chrysogenys*

by C. J. O. HARRISON

Received 17th May, 1968

In 1909 the British Museum (Natural History) received from Dr. C. Hose a small collection of nests and eggs from Sarawak, consisting mainly of those of swiftlets, *Collocalia* spp., but including a nest, clutch of two eggs, and female skin with the bill broken off short, of a spiderhunter, *Arachnothera* species. The specimen was from Claudetown, Baram, Sarawak, dated 9th September, and Hose had tentatively labelled it as *A. modesta* (now *A. affinis modesta*) and marked it with a query. On receipt the nest and eggs were registered under this name and put into the respective collections, the damaged skin remaining unregistered and being left tied to the nest. Recently the nest was re-examined and the skin was checked against those in the collection and found to be that of the Lesser Yellow-eared Spiderhunter, *Arachnothera chrysogenys*, presumably of the race *A. c. harrissoni* Deignan, 1957. The nest and eggs of this species do not appear to have been described.

As with all *Arachnothera* species the nest (B. M. no. N.68.1.) is attached to the underside of a large leaf; in this case of some monocotyledonous plant, the leaf, now a little split and shrivelled but long, slender, and lanceolate, and probably about 80 cms. long and about 18 cms. wide when fresh. The nest is an elongated structure with a rounded outline, looking like a cocoon, and attached along the leaf which appears to have curved upwards and outwards in life so that the nest entrance, which is set distally towards the tip of the leaf, would have been a little higher than the egg-chamber which is towards the other end of the elongated nest.

The nest is sewn to the leaf with fine strands of a fibrous cotton-like material, the ends of which have been thrust through the leaf from below, to show as small blobs about a millimetre in diameter on the upper surface of the leaf, the cut edges of each hole having presumably closed together to grip the material as the bill was withdrawn. There is an irregular row of 'stitches' on either side of the leaf towards the entrance end of the nest, but at the proximal end and around the nest-chamber they are more numerous, occurring in small groups. The nest is *c.* 39 cms. long, *c.* 13 cms. broad at the broadest part just anterior to the nest-chamber, *c.* 11 cms. broad in the region of the nest-chamber, and *c.* 7 cms. deep. Although it shows a close similarity to the nest of the Long-billed Spiderhunter, *A. robusta*, as described and depicted by Gibson-Hill (1949–50) it is not 'bottle-shaped' like the nest of that species but more suggestive of the hull of a boat, being rounded in cross-section and flattened dorsally by the leaf-surface, tapering towards the entrance but broadening as it approaches the nest-chamber and then tapering very slightly towards the rather rounded proximal end. Even allowing for the tendency of the leaf edges to shrivel and roll up, and for possible compression in packing for transport, there is nothing to suggest any real distortion of the original shape.

The outer, main, structure is of coarse, reddish brown fibrous material, very loosely woven but tough enough to form a resilient layer 2–3 cms. thick. One or two tiny fragments of moss are present. The coarser fibrous material suggests the remains of rotted leaf bases of the type often found on the trunks of palm-like plants. There is no roof and the structure is made so that the sides extend up to the under surface of the leaf which forms the roof.

The nest-chamber is actually a secondary cup-nest built within the space formed by the outer structure. It is of fibrous material similiar to that of the outer structure but omitting the coarser material to give a softer and more compact mass. It is a solid pad of material that appears to be *c.* 4 cms. thick, *c.* 18 cms. long, and *c.* 8 cms. broad. There is a centrally placed, slightly elliptical cup *c.* 3.5 cms. deep and *c.* 5–7 cms. across. It is difficult to assess the space available above the cup in the original nest-site but there appears to be a broad groove across the side of this structure from the cup, on the side nearest the entrance, which might have aided access to the cup or might have been caused by pressure from the leaf-stalk over a period in a collection.

The eggs are matt white, and the larger end of each is wreathed with a narrow zone of hair-fine black lines, looking like a tangled and knotted skein, with a few scattered black spots in it. There are a few minute white nodules on the surface of the larger end. One egg measures 21.9 x 15.1 mm.; the other is cracked (B. M. nos. 1909. 10. 31. 1–2).

The original label on the skin states 'this bird lays but two eggs generally, but sometimes three. It seldom brings up more than one young one. Nest hanging to a leaf. Eggs white, with web-like lines around the thick end'.

Both nest and eggs resemble those of the Long-billed Spiderhunter, *A. robusta*, (Gibson-Hill 1949–50) and differ from the suspended cup-shaped nests described for other species.

Reference:

Gibson-Hill, C. A. 1949–50. The nest and eggs of the Long-billed Spiderhunter, *Arachnothera r. robusta* Müll. & Schleg. *Bull. Raffles Mus.* Singapore 21 : 129–131.

Some putative Mandarin Duck hybrids

by Paul A. Johnsgard

Received 16th May, 1968

A few years ago Prestwich (1960) compiled a useful summary of alleged cases of hybridisation by Mandarin Ducks (*Aix galericulata*), in which he discussed four reputed interspecific combinations, collectively involving Wood Duck (*Aix sponsa*), Mallard (*Anas platyrhynchos*), Gadwall (*Anas strepera*) and Redhead (*Aythya americana*). He indicated that Mandarin Ducks have reportedly produced reciprocal crosses with both of the first two species, and that the Gadwall was regarded the male parent in an alleged cross involving that species. Evidence for the supposed cross involving the Redhead is very weak, and its details are unknown. Prestwich concluded that, considering the absence of museum specimens or the production of hybrids under controlled conditions, the occurrence of any hybridisation by Mandarin Ducks must be regarded as unproven. Gray (1958) also reviewed the literature concerning Mandarin hybrids and, although including a few references not mentioned by Prestwich, likewise provides no clear-cut evidence substantiating such hybrids. The conclusion of Prestwich thus mirrored the views of Delacour and Mayr (1945) and of Seth-Smith (1922), all of whom believed that the Mandarin Duck is unable to hybridize even with its nearest living relative, the Wood Duck. The explanation usually advanced for this seemingly unique situation is a reportedly aberrant chromosomal condition of the Mandarin Duck (Yamashina, 1952). After similarly reviewing the literature, however, I listed (1960) the Mandarin Duck as having probably hybridized with the Wood Duck, and also mentioned the possibility of hybridization with one or more species of *Anas*. Since then I have been hopeful that actual specimens of Mandarin Duck hybrids might be located to substantiate this vulnerable position, and it is now possible to report on some probable hybrids.

The first of these came to my attention on 16th June, 1965, during a visit to the waterfowl collection of Mr. William Lemburg, of Cairo, Nebraska. He mentioned to me that two unusual ducklings had just hatched from eggs laid by a female Mandarin in a pen lacking males of this species. The only male ducks present in the pen were Red-crested Pochards (*Netta rufina*) and Laysan Teal (*Anas platyrhynchos laysanensis*). Mr. Lemburg believed that the latter represented the male parent, since he had earlier observed attempted matings by a male Laysan Teal. Only two eggs out of a fairly large clutch had hatched, and both ducklings shared the remarkable feature of totally lacking eyes. The birds were only about a day old at the time of my visit, and I compared (and photographed) them with Mandarin ducklings of about the same age. The absence of eyes had affected the ducklings' head patterning, but otherwise the hybrids' plumage coloration was very similar to that of newly hatched Mandarins. However, their bills were slightly more flattened and wider than those of Mandarins. In spite of the ducklings' blindness I convinced Mr. Lemburg that he should attempt to rear them so that their parentage could be more certainly determined. Unfortunately, within a few days one of them died, but the other soon learned to find its food and water without special attention.

Thereafter it grew and developed at a nearly normal rate. However, at the age of about two months it got out of its small pen, and apparently was unable to find its way back. Some days later its body was found in a somewhat deteriorated condition, but Mr. Lemburg preserved it and later gave it to me. The bird was still in juvenile plumage and the internal organs were too badly decayed to determine its sex, but a study skin (U. of N. no. ZM-10950) was made and most of its body skeleton was separately preserved.

Considering the drabness of the hybrid's plumage (Fig. 1), my first impression was that a Red-crested Pochard was the probable parent. However, comparison of the specimen's measurements and the absence of any paleness along the secondary and inner primary vanes soon convinced me otherwise. Measurements of the hybrid and its probable parental species are presented in Table 1, and support Mr. Lemburg's view that a Laysan Teal was the male parent.

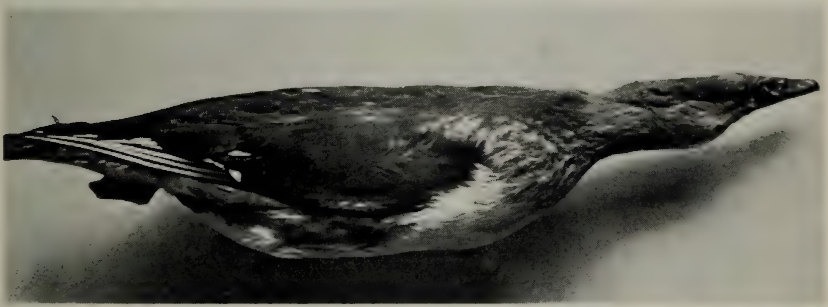

FIG. 1. Skin of probable Laysan Teal x Mandarin Duck hybrid. The flattened appearance of the head is the result of removal of the skull for separate preservation.

The head pattern of the hybrid is mostly mouse-grey, but it lacks the white eye-ring and post-ocular stripe typical of immature or female Mandarins. The breast and flanks are more brownish than are those of Mandarins, and some of the longer flank feathers have a brown and buff pattern that approaches the disruptive patterns found among females of most *Anas* species. The outer vanes of the primaries are silvery grey as in Mandarins, but their tips are only faintly iridescent with a greenish sheen. The only other wing iridescence occurs on the secondaries; their coverts and the other upper wing feathers are an olive-brown. The outer seven secondaries are brownish and their outer webs are only faintly iridescent green, with white or black and white tips. The eighth and ninth secondaries' outer vanes are iridescent blue-green, with black and white tips and a diagonal white stripe projecting anteriorly. The tenth and eleventh secondaries have bluish to blackish outer vanes with little or no white at their tips, but instead have narrow white stripes along their anterior edges. Neither Mandarin Ducks nor Laysan Teal have white anterior markings on their secondaries, but this white anterior border to the speculum has a visual effect remarkably similar to the narrow white border pattern of the secondary coverts in Laysan Teal and the other mallard-like ducks.

Collectively, the available criteria have convinced me that the specimen is indeed a Laysan Teal × Mandarin Duck hybrid.

More recently, some possible hybrids came to my attention through an advertisement in the April, 1967 issue of the *Game Bird Breeders, Aviculturalists and Conservationists' Gazette*, where two Wood Duck × Mandarin Duck hybrids were listed for sale by Norma J. Safford, of Swanzey, New Hampshire. According to her, the birds were among a total of four (the other two being apparently pure Wood Duck) that hatched from a large clutch of eggs laid in 1966 by a female Wood Duck mated to a male Mandarin. Three past years' attempts by this pair to produce offspring had never resulted in any young. I obtained these birds in November, 1967, when they were over a year old and were moulting into a brighter, generally male-like, plumage (Fig. 2). Upon receiving these I contacted the American Museum of Natural History to inquire about the authenticity of an alleged Mandarin × Oldsquaw (*Clangula hyemalis*) that I had earlier noted as in their collection (Johnsgard, 1960). Dr. Lester Short, Jr. examined this specimen carefully and assured me that *Aix* was not involved in its parentage. However, he located a mounted specimen (no. 448985) of an apparent male hybrid between the Wood Duck and Mandarin Duck that had been received without data by the Museum in June of 1932. This

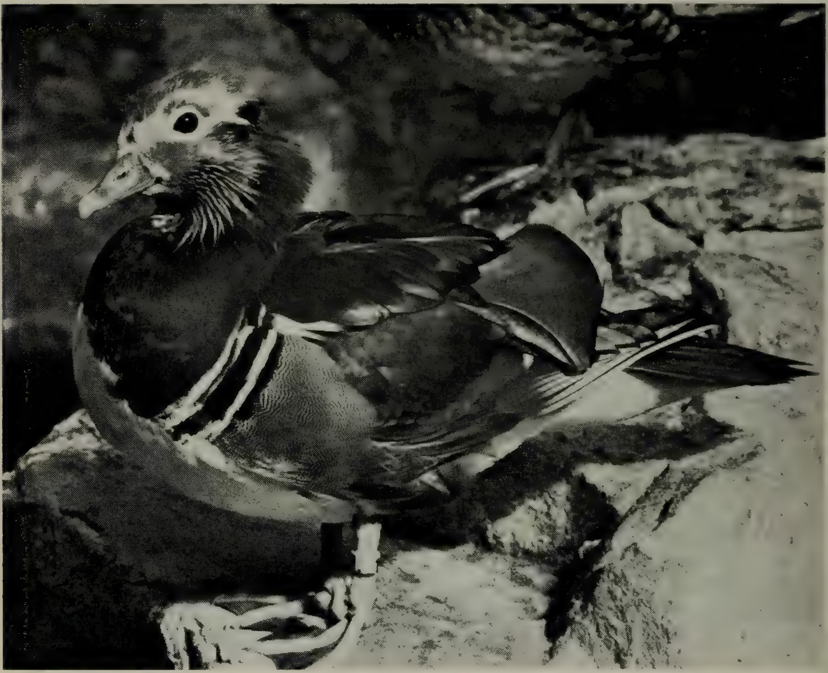

FIG. 2. Specimen L-1 of probable Mandarin Duck x Wood Duck parentage. The photo was taken in March, 1968, after maximum development of the "sail" feather (see text).

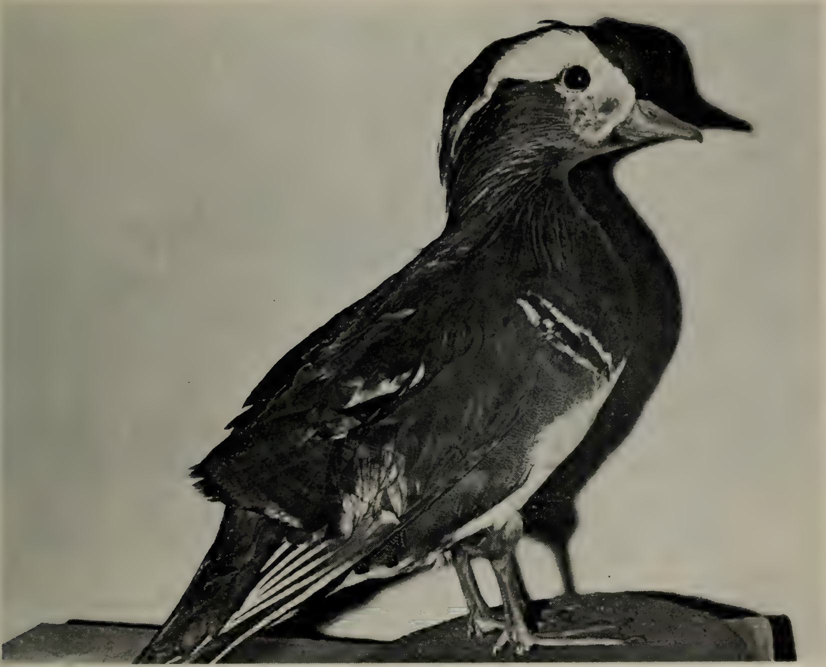

FIG. 3. Mounted specimen of possible Wood Duck x Mandarin Duck parentage. Compare shape and pattern of "sail" feather with Fig. 2.

specimen was sent to me for examination (Fig. 3); its measurements ("AMNH") and those of the two living specimens are presented in the Table. I have also since observed a bird that was reported to result from the pairing of a male Mandarin and a female Wood Duck, and was raised by Calvin Wilson, Tracy Aviary, Salt Lake City. I was not able to closely examine this bird, a presumed male, but did photograph it in April, 1968 (Fig. 4). Mr. Wilson informed me that he had obtained reciprocal crosses between the species, and that the resulting offspring have all resembled the male parent. No typically female-like hybrids have been observed, which suggests that perhaps the apparently male-like appearance of all these birds is actually a relatively neutral plumage condition, and is not indicative of actual sex. Adding substance to this possibility is the fact that the two captive birds have so far shown no interest in either female Mandarins or Wood Ducks.

These two sibling specimens at present differ only slightly in appearance from one another. Their legs and toes are yellow, and the eyes are a very dark brown. The bill varies from reddish to yellow, with a pale nail, and generally resembles that of a Mandarin Duck. The breast colour is maroon, with a very narrow lower fringe of lighter spotting as occurs in Wood Ducks. The vertical striping of the chest is somewhat imperfect, but includes two definite white stripes separated by a wider black stripe, as in Mandarins. The black edges bordering these white stripes are weakly developed and the

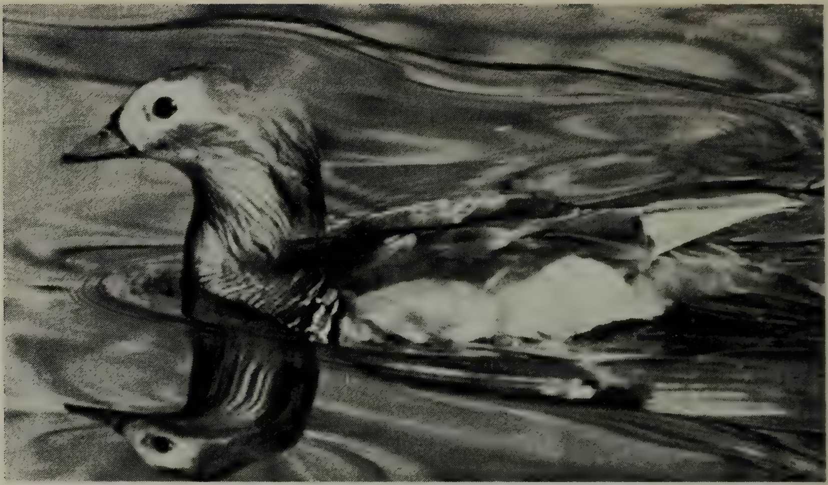

FIG. 4. Salt Lake City specimen (now owned by G. Allen, Jr.) of reputed Mandarin Duck x Wood Duck parentage. Compare head shape and pattern with those in Figs. 2 and 3. The "sail" feather is visible at the base of the primaries, and the longer scapulars are similarly coloured.

anterior one is nearly lacking in one of the males. Both birds have crests that lack iridescence and are somewhat female-like in appearance. The mounted specimen is similar in general features, but has a more highly developed iridescent crest, longer "whiskers", and a more definite facial pattern than do the living birds. Its head colour is generally Mandarin-like except for a brown post-ocular stripe and a narrower supra-ocular white area than is typical of Mandarins, and this area is heavily tinged with rusty coloration in front of and below the eyes. The specimen raised by Mr. Wilson is more generally greyish to brownish on both its head and body, but has a brightly reddish bill, well developed crest and "whiskers" (both greyish), and imperfect vertical chest stripes. It is thus the most female-like of the four birds examined.

The outer scapulars of the two parental species differ in that the male Wood Duck lacks any white patterning in this region whereas the Mandarin Duck has a series of strongly contrasting black and white elongated feathers. One of the captive specimens (R-2) has scapulars that are uniformly iridescent blue-green or blackish. The other male has four small feathers on its right side that are entirely white, plus three larger black and white feathers. The largest of these is mostly iridescent black except for a small white oval patch. On the left side there is a single small white feather and three more that are black and white. The mounted specimen has two large iridescent black and mottled white feathers on its right side, and a similar pair on the left, plus some smaller anterior feathers with varying amounts of white. No white feathering was visible on the scapulars of the Salt Lake City specimen.

The flank patterns are similar in males of both species and all the apparent hybrids, but the latter lack the conspicuous black and white terminal barring of the longer flank feathers that occurs in Wood Ducks.

The under tail-coverts are white, as in Mandarins, and the upper tail-coverts are mostly brown and quite distinct from the ornamental black and tawny ornamental upper tail-coverts of male Wood Ducks. The under wing-coverts and axillaries are a nearly uniform brown, unlike the barred brown and white condition found in Wood Ducks. The tail is brown with almost no iridescence, and seems to be slightly shorter than that typical of males of either species. The wing length is slightly greater than that characteristic of male Mandarins, but considerably under the length typical of Wood Ducks (Table).

TABLE

Comparative measurements (in mm.) of hybrids and parental species

	Wing	*Culmen*	*Tarsus*	*Tail*
Laysan Teal*				
females	190–196	38–39	35–38	90
Teal x Mandarin				
juvenile	215	31	34	82 (broken)
Mandarin Duck*				
females	217–230	26–30	32	107
males	220–235	27–31	33	110–115
Wood Duck x Mandarin				
L-1	233	27	32	106
R-2	238	29	32	106
AMNH	225	28	35	103
Wood Duck*				
females	208–230	30–33	32	103
males	250–285	33–35	34–35	125–127

* Measurements cited for parental species are from Phillips (1924) and Delacour (1959).

It is in the inner remiges that these two species diverge most remarkably, a feature which has been discussed in detail by Miller (1925). He pointed out that the two species differ in the number of their typical secondaries (10 in Wood Ducks, 11 in Mandarins), and that their five proximal secondaries ("tertials") differ even more remarkably, particularly among males (see Fig. 5). These latter differences are clearly related to the development of the Mandarin's "sail" feather and to its significance during sexual display.

The outer webs of the first nine secondaries of male Mandarins are bronzy-olive to iridescent blue with narrow white tips, while in the Wood Duck they are all iridescent blue with narrow white tips. The corresponding feathers on the presumed hybrids have olive-brown or (in the inner four) iridescent blue-green outer vanes with somewhat wider white tips. The tenth secondary (ignoring the "missing" fifth secondary resulting from diastataxy) of male Mandarin Ducks is like the first nine, although its white tip is narrow or lacking, while that of Wood Ducks has an iridescent coppery red outer vane that is angular and lacks a white tip. In the presumed hybrids the outer vane of this feather is iridescent blue, with a very narrow white tip. The Mandarin has one more typical secondary, similar to the tenth in shape and pattern, but the Wood Duck's more proximal feather is a differentiated and larger "tertial" that Miller (1925) believed to be homologous with the Mandarin's "sail" feather. The apparent hybrids' corresponding feathers are not sail-like, but are somewhat enlarged and resemble the Wood Duck's first tertial. This intermediate shape suggests that the eleventh secondaries are probably homologous in the two species, and that the reduction of remiges by one among Wood Ducks must have occurred among the more proximal "tertials." Brinckmann (1958) was led to the same conclusion in her study of the Mandarin wing feathers.

The Mandarin's first tertial (twelfth secondary) is long and curved, with the inner vane greatly expanded into a rufous "sail," while the outer vane is normally shaped, with violet-blue iridescence. The Wood Duck's twelfth secondary is surprisingly short, and is normally hidden below the next, which it closely resembles in shape and colour. Both lack white tips and have metallic blue-black iridescence near their tips. The situation in the two sibling specimens is confusing. Both birds had present on one side only the remains of a long (shaft 11.3 cm.), straight, fuscous-brown feather, both vanes of which were badly worn and lacked iridescence. This feather was doubtless from an earlier feather generation, perhaps even that of the juvenal plumage. However, since male Mandarins moult their tertials twice a year and have a straight, unspecialised "eclipse" remix of about eleven centimetres located at this point (Brinckmann, 1958), the feather's identity is uncertain. At the corresponding location on the left wing of male L–1 a small (shaft 5.6 cm.), triangular feather was present, which closely resembled in shape and pattern those illustrated by Brinckmann (1958 : 576) as resulting from induced regeneration during late winter and spring. This feather and the two badly worn ones were plucked for examination in November. Evidently no new feathers resulted from removing the two worn ones, but on the left side of male L–1 a much larger and more nearly typical "sail" feather grew.

In the mounted specimen the first ten secondaries on the right side had been cut off near their bases, but those on the left side corresponded in shape and pattern to the other specimens. Likewise the eleventh secondary on both sides was as described above, but the inner vane was slightly wider and more iridescent. The adjacent "sail" feathers on both sides were almost as large as in Mandarins, but the inner vanes were less recurved and have a curious pattern of alternating "ripples" of iridescent green and purple, which fades to a buffy tip: the outer vanes were iridescent violet. The Salt Lake City specimen appeared to have an intermediate-shaped and rufous-coloured "sail" feather on its left side, which was not lifted above the other feathers. No corresponding feather was visible on the right (pinioned) side.

The remaining four inner tertials of the Mandarin Duck are all quite small, and vary somewhat in shape (Fig. 5). The Wood Duck has only two or three more proximal remiges, which are all similar in shape but are graduated in size. In all three of the specimens that were examined the thirteenth remix was slightly sail-like and of reduced size. Two or three more proximal feathers were also present and presumably represented the innermost tertials, but they could not be easily distinguished from the adjacent wing-coverts. It is thus clearly evident, if the birds are actually hybrids, that the homologies of the proximal wing feathers are as suggested by Brinckmann (1958) rather than as proposed by Miller (1925).

Although the condition of the remiges was thus of interest, it was surprising to find among the proximal greater coverts and adjacent scapulars of the sibling specimens a few feathers that exhibited character-

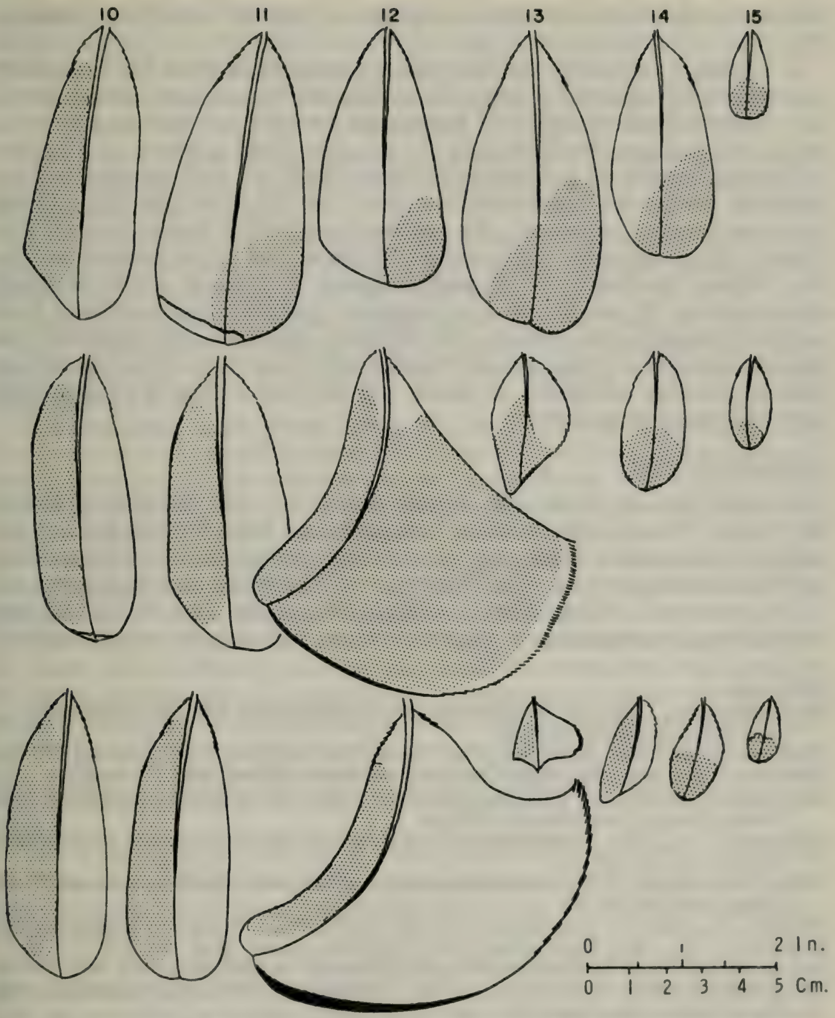

FIG. 5. Diagram of the proximal remiges of Wood Duck (above), Mandarin Duck (below) and probable hybrids (middle). Stippled areas are iridescent; numbering of feathers is from most distal secondary. The feathers shown are all from the left wing, as seen from above. Iridescence on the inner vane of the "sail" feather varied among the hybrids, as did the shape and size. That shown is the condition of the mounted specimen (Fig. 3).

istics of the Mandarin Duck's "sail". One of these coverts on the left wing of specimen R–2 was very similar to the reduced "sail" of specimen L–1, but was even more strongly rufous on the inner vane. One other scapular on the opposite side of R–2 was of elongated shape but rufous coloration, and three of the longer scapulars on the other bird had the same rufous or rufous and black pattern on one vane. A similar rufous coloration was also visible in the scapulars of the Salt Lake City specimen (Fig. 2).

In summary, although the two sibling specimens and the Salt Lake City specimen were reported to hatch from eggs laid by a female Wood Duck, they show a predominance of Mandarin features, as well as a few inexplicable plumage characteristics. To consider them as aberrant Mandarins having intersex or sex mosaic features would not only require that the maternal parent was incorrectly identified, but also that they all suffered the same genetic "accident", the probability of which seems remote. The history of the museum specimen is unknown, but it corresponds to the two sibling specimens in its measurements and some of its plumage characteristics. If, as Mr. Wilson suggests, paternal characterisitics tend to be expressed in the hybrids, the mounted specimen may represent the reciprocal cross involving a male Wood Duck. None of the living specimens have shown any indication of sexual activity, and it thus is unlikely that they will prove to be fertile.

Acknowledgments

I would like to thank Dr. Lester Short, Jr., Mr. Charles O'Brien, Mr. Calvin Wilson, Mr. William Lemburg, and Miss Norma Safford for their co-operation in helping me obtain these specimens, and for providing information about them. The University of Nebraska arranged purchase of the presumed sibling hybrids, and the Municipal Zoo of Lincoln has helpfully maintained them in a location where they may be readily studied.

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The occurrence of *Certhia familiaris macrodactyla* C. L. Brehm in the British Isles

by JAMES HARRISON

Received 6th May, 1968

Considering the frequent and regular occurrences of the Continental race of the Great Tit, *Parus major major*, and Blue Tit, *Parus caeruleus caeruleus* in the British Isles, it is surprising how very infrequent are the visits of the nominate form of the Tree Creeper, *Certhia familiaris familiaris* by comparison, while there have been no positive records of any other race of the species than the nominate. Up to 1952, the date of the publication of the *Check List of the Birds of Great Britain and Ireland*, there were only two records of this form for England and five for Scotland.

Since then what was apparently an immigrant Tree Creeper was noted in the *Dungeness Bird Observatory Report* (1957, p.18), as follows:

'298 Tree Creeper: a pale bird trapped on 10th October was not of the race *Certhia familiaris britannica* nor of the (sub)species *C. brachydactyla* (Short-toed Tree Creeper).

From the full description taken, it was not possible safely to ascribe the bird to *C. f. familiaris* (Northern) nor to *C. f. macrodactyla* (intermediate). A first record of this species for the observatory.'

Another instance of what would appear to have been an immigrant Tree Creeper is to be found recorded in the *Sandwich Bay Bird Observatory Report* 1964–65, p.39 as follows: '298 Tree Creeper, 1964. One on 5th September, (J.N.H.)'

Differentation of the several races of *Certhia familiaris* entails a critical comparison of the various geographical forms, and this is also necessary in order to distinguish the two species, *viz: familiaris* and *brachydactyla*, and it should be noted that on rare occasions individuals of *familiaris* can even show a dusky carpal spot on the under surface of the wing.

When recently going through a series of this species collected in England, an individual was found which was conspicuously different from all the others in the series which are remarkably uniform.

This bird is a female, and was collected by myself on 10th October, 1919 in the St. Helens Wood, Hastings, Sussex. When compared with examples of the nominate race, it is seen to be browner above, while when viewed against examples of the indigenous race, *C. f. britannica* it is distinctly paler above. On the rump this individual is somewhat paler russet, though less pale in this region than is the nominate bird. In fact this individual is clearly intermediate in its characters between the British and nominate forms.

The underparts are far whiter than those of the British race, and the buffish wash on the flanks and under tail-coverts is also paler and less extensive. However, it is less pure white than is the Northern Tree Creeper, *C. f. familiaris.*

Racially most forms of this species are well defined, but with *C. f. macrodactyla* while sufficiently well differentiated in the series, individuals can be met with in British taken specimens which approach rather closely to this European form.

The only helpful structural character is the bill measurement, which in *C. f. macrodactyla* is longer than in the British form, while it is worth mentioning that the majority of specimens collected in the Bernese Oberland are amongst the longest billed individuals of this race, though this finding is not absolute. In them the bill variation, as measured from the skull, is from 16–20 mm.

The specimen was compared with examples from Russia, Bulgaria, Denmark, Germany, France (Central Pyrenees), and Switzerland (Bernese Oberland) and has a bill measurement of 18.5 mm.

However, it is undoubtedly on the general characters that a determination is to be made, because in a sufficiently large series individuals will be met with in which the bill measurement will be found to be unreliable as a decisive character as there is some overlap in this measurement in the three forms discussed.

The name of the Grey Sunbird

by P. A. Clancey

Received 16th April, 1968

The sombre Grey or Mouse-coloured Sunbird *Nectarinia veroxii* of the littoral of south-eastern and eastern Africa was originally described as *Cinnyris Veroxii* by Dr. Andrew Smith (1831). The species was proposed on a specimen from Cafferland presented to Smith by M. Jules Verreaux. Prior to 1831, Smith had been the Superintendent of the South African Museum, Cape Town, in which institution Verreaux was employed in the capacity of taxidermist [Kirby (1965)]. Some years later, Smith again used the same unorthodox spelling of Verreaux's name in describing *Mus Veroxii* Smith, 1834, and *Otis Veroxii* Smith, 1836. These obvious misspellings of Verreaux's name strike a discordant note, because a survey of most of Smith's ornithological writings in the Willughy Society's reprints (1880) shows that he was otherwise meticulous in his employment of dedicatory names, using the honoured person's name unaltered in any way, only adding the single or double terminal i as the case warranted. Smith's use of *veroxii* instead of *verreauxii* is quite evidently intentional, and perhaps stems from a play on the name Verreaux and the Latin word *ferox*, ardent, fierce or warlike. Historical literature does not tell us if Jules Verreaux was particularly belligerent by nature or overtly ardent in his museum duties, though the possibility exists that Smith considered him to possess such traits.

Delacour (1944) has already corrected the name of the Grey Sunbird to *verreauxi* (*i*), though he has not been followed in this action by more recent workers. Years before Delacour wrote, Sherborn (1932) suggested that *veroxii* should become *verreauxi* (*i*). In the case of the rodent named *veroxii*, I note that Ellerman *et al.* (1953) use the corrected version, in the combination *Rattus verreauxi* A. Smith.

I believe that, in agreement with Sherborn, Delacour and the mammalogists, the name of the Grey Sunbird should actually be corrected from *N. veroxii* to *N. verreauxii*. However, Article 32 (a) of the *International Code* (1961), dealing with the correct original spelling of names, is quite explicit on an issue such as the one under consideration. Subsection (ii) states that the original spelling of a name is to be retained unless "there is in the original publication clear evidence of an inadvertent error, such as a lapsus calami, or a copyist's or printer's error (incorrect transliteration, improper latinization, and use of an inappropriate connecting vowel are not to be considered inadvertent errors)". As Smith used *veroxii* for three different taxa in three different publications in three different years no *lapsus calami* or inadvertent error occurred in the naming of *Cinnyris Veroxii.*

Veroxii is clearly a deliberately effected incorrect transliteration of the name Verreaux, but under the terms of Article 32 of the International Code a correction of the name to *verreauxii* is inadmissible.

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Records of Falconiformes from the Lake Rudolf area, Kenya

by Oscar T. Owre and Dennis R. Paulson

Received 2nd August, 1968

Among numbers of Falconiformes collected by the Maytag-University of Miami Expedition to Kenya (1958–1959) are certain specimens which are of interest in a consideration of the East African avifauna.

Falco peregrinus pelegrinoides Temminck

Two were observed 4th November, 1958, on the east side of von Höhnel's Bay just north and inland of the oasis of Loiyangalani. On that date numerous birds of prey, obviously in migration, were evident. The two Barbary Falcons were conspicuous in their flight as they passed above the barren, rocky hillsides. The specimen collected, one of the above, was an adult female weighing 609 grams; its irides were dark brown, its cere, legs, and toes yellow. Identification of this specimen was confirmed by Dr. Charles Vaurie of the American Museum of Natural History.

The Barbary Falcon is known to range southward into the Egyptian Sudan (Sclater, 1924: 50). This specimen is apparently the first Barbary Falcon taken in Kenya.

Aquila clanga Pallas

A Greater Spotted Eagle, collected at El Molo Bay, 19th October, 1958, probably represents the southernmost point of collection of this species in Africa as well as the first specimen for Kenya. Identification of the specimen, a female in immature plumage, its remiges much worn, was made at the American Museum of Natural History by Drs. Erwin Stresemann and Charles Vaurie. Bednall (1959: 144) reported a possible sight record of the eagle for Nairobi.

The eagle was encountered at the waterline of a sandy beach. Standing quietly on the ground, its feathers much ruffled by strong wind, it did not flush upon close approach. Fish in advanced stages of digestion were in its stomach.

Circaëtus gallicus (Gmelin)

A Short-toed Harrier Eagle was collected 27th October, 1958, at Uraubuli Luggar, approximately 30 miles north of Loiyangalani. Attention to the eagle, perched atop an acacia of the fringing growth of the luggar, was directed by mobbing of it by Yellow-billed Hornbills, *Tockus flavirostris* (Rüppell) and Lesser Brown-necked Ravens, *Corvus corax edithae* Phillips. An adult female weighing 1,304 grams, its irides were a strikingly pronounced yellow. Portions of a monitor lizard, *Varanus exanthematicus*, were in its stomach.

No other specimens of this species had been previously reported from Kenya which heretofore has been considered (Sclater, 1924: 63) somewhat south of the wintering range of this migrant from the Palaearctic.

Buteo rufinus (Cretzschmar)

6th November, 1958, during the period when migrating birds of prey were in abundance in the Rudolf area, an adult male Long-legged Buzzard, in the reddish-brown phase, was collected just north of Loiyangalani. As it stood on a ledge protruding from a steep hillside, the buzzard's plumage nicely matched the background of reddish soil. Weight of the buzzard was 1,280 grams.

This is apparently the first specimen of this species taken in Kenya, its usual range not extending this far south in Africa (Sclater, 1924: 66).

Accipiter nisus (Linnaeus)

Winter records of the European Sparrow Hawk are not common from as far south in Africa as Kenya, although the species has been reported from Tanzania (Mackworth-Praed and Grant, 1952: 110) and a specimen collected (Leakey, 1943: 116) in Kenya. The present specimen apparently constitutes the second record from Kenya and the first from the Northern Frontier Province.

Identification of this specimen, an adult female which weighed 116g. and was collected five miles south of Loiyangalani, was confirmed by Dr. Charles Vaurie, who designated it *Accipiter n. nisus* (Linnaeus).

Specimens cited above are part of the ornithological collections of the Department of Biology of the University of Miami.

Considering that few observations have been made of birds in the Rudolf area over a protracted period, it is not surprising that species were encountered which have been unreported for the Kenya avifauna. Additional distributional records may be awaited from the area, in particular those of Falconiformes and of other diurnal migrants which from an aerodynamic point of view would seem to find about the lake favourable conditions of passage. The terrain about Rudolf, mostly semi-desert, is an uneven one with precipitous hills and mountains and often rugged shorelines. Thermals are ubiquitous and the strong winds of the Rift Valley produce obstruction currents utilized, along with the thermals, by many birds on migration. Lake Rudolf itself is an important source of prey for many falconiform birds. Its shallows teem with fish which furnish food for obligate piscivores. The 150 mile long lake attracts numbers of waterbirds, especially Charadriiformes, to its sheltered bays; many hawks exploit these populations with ease. Orthopterans, lizards, and ground squirrels of the semi-desert furnish prey to additional species.

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CONTRIBUTORS

Contributions are not restricted to members of the B.O.C. and should be addressed to the Editor, Mr. John Yealland, The Zoological Society of London, Regent's Park, London, N.W.1. These should be concise and typed on one side of the paper, double-spaced, with a good margin. The first time a species is mentioned, the scientific generic and specific names should be included. Subsequently the same name need only have the initial letter of the genus. Scientific names are printed in italics and should be underlined in the typescript. References should be given at the end of the paper.

Authors introducing a new name or describing a new species or race should indicate this in their title and display the name prominently in the text followed by *nom. nov.*, *sp. nov.*, *subsp. nov.* as appropriate. In these descriptions, the first introduction of the name should be followed by paragraphs for "Description", "Distribution", "Type", "Measurements of Type", "Material examined" and further sub-headings as required.

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DINNERS AND MEETINGS FOR 1968

19th November, 17th December.

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Edited by
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BULLETIN
OF THE
BRITISH ORNITHOLOGISTS' CLUB

Volume 88
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The six hundred and fifty-fourth meeting of the Club was held at the Rembrandt Hotel, London, on the 19th November, 1968.

Chairman: Sir Hugh Elliot, Bt.

Members present: 20; Guests 5.

Dr. J. G. Harrison gave a well illustrated talk on the management of a wildfowl reserve created from some disused and flooded gravel-pits near Sevenoaks, Kent.

Notice of Special General Meeting

Notice is hereby given that a SPECIAL GENERAL MEETING will be held, on the instance of the Committee, at 6 p.m. at the Rembrandt Hotel, London, S.W.7., on Tuesday, 17th December, 1968.

The following two Special Resolutions will be proposed by the Committee:

(1) That the first sentence of Rule 6 of the Rules of the Club be altered to read 'The Club will meet on the third Tuesday of alternate months during the year as may be convenient, at such hour and place as may be arranged by the Committee'.

(2) That Rule 7 be deleted and the following substituted:

> 'The Annual General Meeting of the Club shall be held on a date announced by the Committee in April or May of each year. At this Meeting, the business transacted shall be the adoption of the Report of the Committee, the passing of the Accounts of the preceeding year, the regulation of matters having reference to the *Bulletin*, the election of Officers and Members of the Committee and any business of which due notice shall have been given to the Honorary Secretary prior to the 31st January of the same year.'

Explanatory Note:

In the light of the discussion at the meeting held on 15th October, 1968, the Committee, at its meeting on 29th October, 1968, decided that in future the *Bulletin* should be published in alternate months throughout the year starting in February 1969. (This decision necessitates no change to the Rules.)

It was also decided to propose holding the meetings in alternate months throughout the year, namely in January, March, May, July, September and November, and that the Annual General Meeting should be held either in April or in May as convenient. Such proposals require alteration to the Rules, for which it is necessary to pass the Special Resolutions as stated above, and since it was the Committee's intention that such changes should come into force at the beginning of a calendar year, and with the start of a new volume of the *Bulletin*, the Committee has called this Special General Meeting for December. At the same time, it has taken the opportunity to make Rule 7 more explicit.

In the light of these proposals there will be no publication of the *Bulletin* in January 1969. On the other hand, owing to previous arrangements having been made, meetings will be held as usual at the Rembrandt Hotel in January, February, March and April. Thereafter, it is hoped that a new venue will have been decided upon, where the cost of the meal is more acceptable to Members. The Committee has two possibilities under consideration, one providing a buffet supper and the other a dinner, and it is possible that these will alternate throughout the year.

MARTIN W. WOODCOCK,
Hon. Secretary.

Examples of intersexuality in the Mallard and Teal

by JAMES HARRISON

Received 1st July, 1968

Introduction

Intersexuality in birds presents a state of anomalous secondary sexual characters and can be determined by a variety of causes. The condition has been known since the middle ages when the subjects were regarded as the result of witchcraft and were disposed of accordingly often by being burned at the stake!

I suppose the earliest scientific account of the condition was the result of the investigations of the eminent surgeon of his day, Dr. John Hunter, and the results find mention by Yarrell in his *History of British Birds* (1884, vol. III, pp. 102, 103).

From that date onwards the study of these cases of intersexuality became the target for an increasing volume of research, which included such measures as the surgical ablation of the gonads of both sexes as well as the implantations of gonad grafts, and by these means clarification of the problems involved became far better understood.

So voluminous is the literature covering these basic and early studies that it is not possible to do more than indicate their importance as a fundamental biological study.

The advances made have been substantial but even in our present times we cannot regard the research as finalised by any means. Hence it is that every case should in consequence be submitted to an expert investigation, which of course includes as an essential an anatomical and histological examination.

In the small passeres it is a state, except in those species which happen to have very strongly differentiated secondary sexual characters, which is likely to be missed, but of course in such birds as pheasants and duck, the change is at once apparent to all, and invariably attracts much interest. Usually, however, such birds may be preserved, usually as mounted specimens, but all other investigations have been omitted, while of course mostly other notes, such as behavioural details, etc. are not recorded. In the case of the "cocky-hen" or "mule" pheasant and in similar cases in the domestic fowl the fact that the individual makes no appeal to either sex, and is in fact shunned by normally constituted birds is on record.

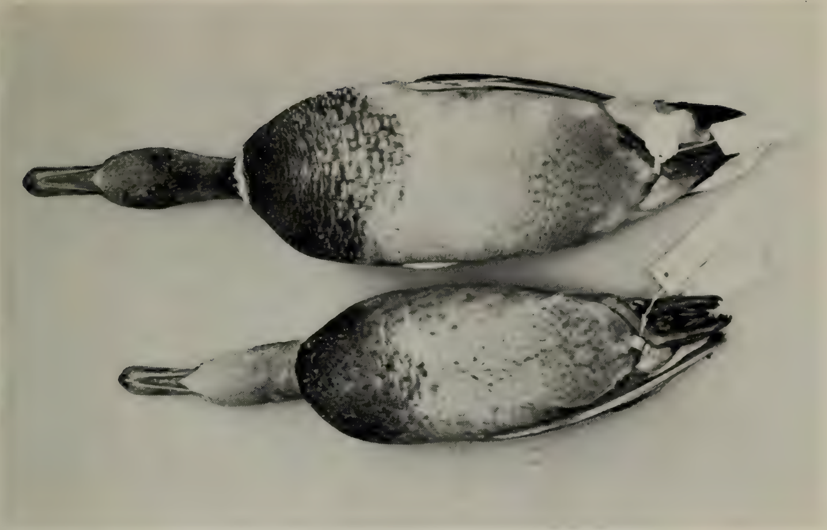


PLATE I
Bottom: Mallard intersex, 16th February, 1963, Middleburg, Holland.
Top: Mallard intersex, 18th November, 1967, Sevenoaks, Kent

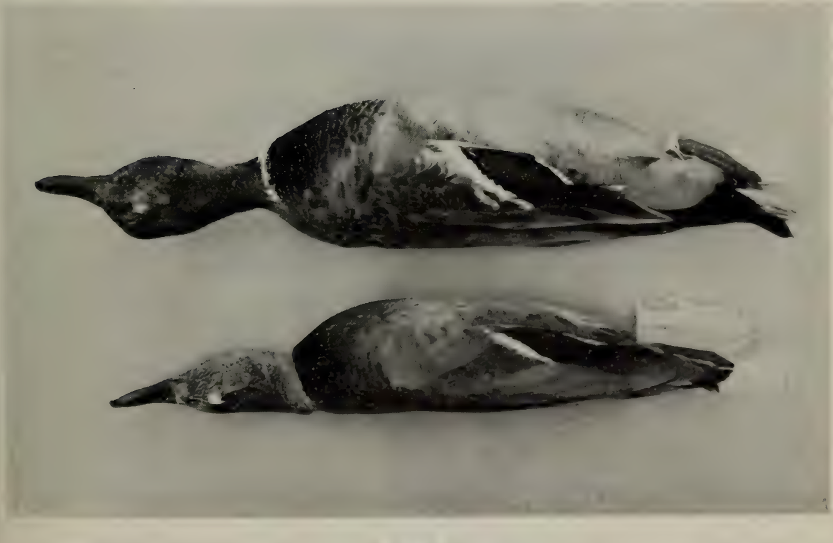


PLATE II
Bottom: Mallard intersex, 16th February, 1963, Middleburg, Holland
Top: Mallard intersex, 18th November, 1967, Sevenoaks, Kent

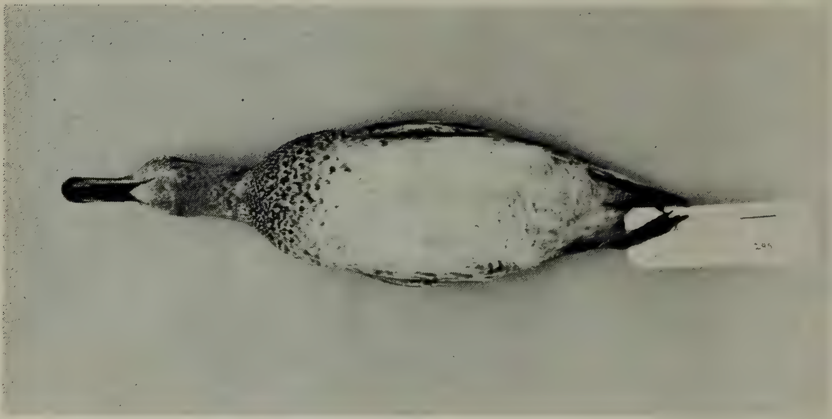
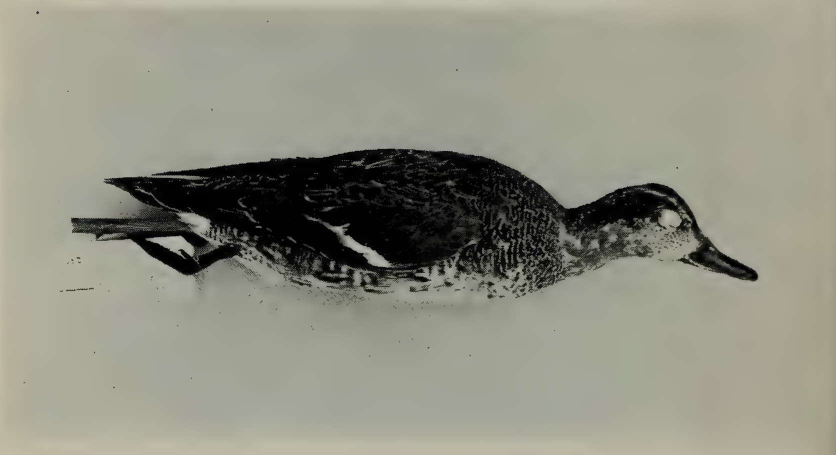


PLATE III

Teal intersex: 1st year, 18th January, 1957, le Sambuc, Camargue, France



Photographs by Dr. Pamela Harrison

PLATE IV

Teal intersex: 1st year, 18th January, 1957, le Sambuc, Camargue, France

This condition is surprisingly prevalent, and one can only think that in the game birds, domestic breeds of fowl and waterfowl the intersexual state may be favoured to some extent as a result of semi-domestication in which they live.

However, without doubt it can occur in the wild state, and indeed there are a number of such records. Another factor favouring intersexuality is that of hybridisation, and one can well understand how this could possibly occasion this condition in view of the gross genetic disturbances caused by the interspecific and, also occasionally, intergeneric hybridisation.

Possibly also inbreeding would favour intersexuality, and in this connection the Mallard is undoubtedly a species which is very much inbred, and one moreover in which there is a strong taint of domesticity. It is well known to be very liable to produce variants, albescents, melanistic and pied examples being extremely common. In any very cloistered community the individual variation can be most bizarre. As a species it is very widely distributed, so that the normal and natural phenotype stands at no risk of being swamped by the very numerous variants the species shows. That this is so is only due to the fact that many of the breeding areas of Mallard include locations which are at one and the same time remote geographically, and far removed from centres of civilisation, where contamination with impure stocks is only too common and is a factor favouring the continuance of the many varieties recorded.

These general observations provide the basic background in general to intersexuality in birds, and this is moreover rendered more likely by some peculiarities in avian physiology which will be discussed later when considering the various cases.

Material

This consists of two Mallard and a Teal, one of the former, for the loan of which I am indebted to Professor Voous and Dr. J. Wattel of the Department of Zoology, University of Amsterdam, to whom it was presented by Mr. T. Lebret of Middleburg (Pl. I and Pl. II).

Mr. Lebret has favoured me (*in litt.* 6. vi. 68) with very complete details of the history of this individual as follows:

"The bird originated from a deserted clutch in my pen, where I keep a pair of wild caught Mallard. The two eggs were due to hatch and on 13th August, 1961, the bird concerned which so far had been a normal juv. ♀ showed signs of male plumage. But only in the spring of 1962 she commenced to produce a white neck band and a pronounced contrast between a normal female neck plumage above the neck band and a "male" breast under it. Also "a drake tail curl" started to develop. The bird was wing-clipped but moulted already in May and escaped on 27th May. This was due to non-symmetrical moult of the primaries.

She and the ♂ of the same clutch regularly visited my pond during the summer and autumn of 1962. On 7th September, 1962, the intersex started to develop grey flanks. In autumn the visits of the birds were less regular.

During the severe winter the birds were about but I saw the ♂ on a feeding centre in the town moat once in January 1963.

Then on about 16th February, 1963, when coming home from the office at approximately 17.30 hours, the intersex was *walking* on the snow-covered lane in the bungalow park in the direction of my garden. I herded her to protect her from dogs and cats. It seems she was too starved to fly to my pond. When I was giving her some rest before catching her to put her inside the pen, she was attacked by a dog and shied away, so that I could not catch her and next morning she had died."

This is a very complete account and a very valuable one, in that it gives us the precise age of this individual which can consequently be correlated with the histological findings.

In the second case (Pl. I and II) the story is as lacking in detail as the first was full, for the bird, a wild one, appeared on a gravel pit in the Sevenoaks district on 18th November, 1967 and was promptly collected for me by Jeffery Harrison, not as might be imagined on the water at leisure, but singled out from a party in flight. This is important as showing that the characteristics of these intersexes are recognisable in the field by the perceiving observer, but of course this is indeed the necessary initial step in the proper and full investigation of all such cases.

Teal

This specimen which was kindly loaned to me by Dr. Luc Hoffmann, is a first winter bird which was obtained on 18th January, 1957 (Pl. III and IV) in the Tour du Valat, le Sambuc, Camargue, France (Collection No. 295). The specimen is in transition plumage to its first winter dress and the head and neck have already developed a rather pale chestnut, while the post-ocular green area, so typical of the adult drake Teal is rather dull, and the crown is brownish and the feathers are tipped with sepia, giving it a striped appearance. The lores are pale and finely streaked while there are pale superciliary stripes. The breast is spotted as in the drake Teal, and the flanks are partly barred brownish, some of the feathers transversely, others longitudinally. The rather coarse vermiculated flanks of the first winter dress are also coming through.

The upperparts are an admixture of the juvenile dress, and of first winter feathering. There is no evidence of the assumption of the pale buffish-yellow flank feathers which embrace the root of the tail, and the under tail-coverts show a mixture of whitish dusky vermiculated type with a few blackish feathers; some of the outermost are very faintly tinged with palest buffy-yellow.

The bird is sexed as a "♀ (intersex)", but the taxidermist has added "? weder Ovar noch Hoden gefunden!" So that the anomalous appearances the specimen presents are clearly confirmed anatomically.

One can safely assume I think that in this case there may possibly have been some tumescence visible in the sexing of the bird which in all probability lacked the typical appearances of an ovary and also that there was no other obvious gross anatomical condition to be seen to account for the changes observable in the secondary sexual characters.

Gross anatomical appearances of the Mallard

In both the Middleburg and Sevenoaks specimens of the Mallard the macroscopic anatomical appearances are broadly similar, and are adequately described as revealing a small tumescence in the situation of the ovary in normal birds, in the case of the Sevenoaks specimen there was no evidence of the presence of a right-sided gonad; nor of any adrenal hyperplasia or of metastatic growths.

Upon enquiry from Dr. J. Wattel, to the best of his knowledge, these possible additional factors can also be ruled out. Indeed Dr. Wattel's first impressions were that what he personally saw in the specimen was in effect an embryonic ovary. In fact writing to me (1st September, 1967) he says "The gonads of this bird were fixed in Bouin and looked like an undeveloped ovary macroscopically." And it is, I think, most likely that this was also the determining cause of the intersexuality of the specimen of the Teal from the Camargue.

Histology

In certain cases the results are such that there is no questioning of the findings. That this was so in the case of the Middleburg specimen of the Mallard was certainly not the case.

Allowing of course for the fact that not very much attention has been paid to the study of avian histology, beyond the very basic facts that can be found in any elementary text book on zoology, let alone the age stages in the gonads of both sexes, so that some very fundamental and vital comparisons can be made indicates, I think, that this is a field of research in ornithology which can well be explored with some prospect of rewarding results.

The truth of this assertion was made very obvious by the sections of the ovary of the Middleburg bird, which *as an adult* presented some revealing features, for at this stage in the bird's life this organ should at least have presented some unequivocal histological appearances of its ovarian nature. Instead the tissues show closely packed cells most of them of cubical and columnar-celled types. In fact the various opinions ranged from an embryonic ovary (the correct diagnosis, originally suggested by Dr. Wattel, and confirmed later histologically by Dr. G. W. Storey, consulting pathologist, the National Temperance Horpital, London), to an arhenoblastoma or adrenal tissue!

Dr. Storey's considered opinion was sent me (*in litt.* 24th January, 1968) in the following terms: "Respecting the Dutch specimen, the "ovary" is somewhat autolysed but one can make out the structure which gives me the impression of being somewhat immature but no different from that of young birds. The "oviduct" seemed to have a highly proliferative mucosa and were it not for the type of lining epithelium I would have thought it similar to gut."

In the case of the Sevenoaks specimen he writes: "(the tissue) is very small and shows chiefly neural tissue and blood vessels with this curious small organ I thought at first to be ganglion tissue! I would really not have recognised this as ovary as it seems almost 'embryonal' in type. It may well be that it is very immature ovary but I could not be certain."

Summary and Discussion

This paper describes three intersexes, two in the Mallard and one in a Teal, one of the former was reared in captivity though it subsequently died in the wild. The other, as was the Teal, wildshot.

Histological examinations were carried out in the case of the two Mallard, the results in the two examined microscopically, and the other on macroscopic appearances suggesting ovarian agenesis.

The comments throughout this paper are intended to stimulate and advance our knowledge of what is a line of research of absorbing interest and of no little importance as a biological study.

Acknowledgments

The author's first indebtedness is to Professor Voous and Dr. J. Wattel of the Zoological Museum, University of Amsterdam for the loan of the Dutch specimen, to Dr. Jeffery Harrison for collecting the Sevenoaks specimen, while I am also most grateful to Dr. Luc Hoffmann, of the Station Biologique, the Tour du Valat, le Sambuc, Camargue, France, for the loan of the specimen of the Teal.

My grateful acknowledgments to Dr. G. W. Storey for the histological preparations and for his valuable opinions on these are self evident.

Finally for the photography of the three specimens my sincere thanks are due to Dr. Pamela Harrison.

Wanderings of the Blue-winged Pitta to Australia

by D. L. Serventy

Received 21st June, 1968

In November, 1927, Mr. N. E. Spry, the owner of Mandora Station, Wallal, between Port Hedland and Broome, Western Australia, picked up a dead pitta in the bush and sent it to the Western Australian Museum, Perth, where it was received on 1st February, 1928. Here it puzzled the Curator (Mr. L. Glauert) and local ornithologists, as this arid country offers no suitable habitat for such a species, particularly as it was identified as a Blue-winged Pitta (*Pitta moluccensis**), a Malayan species, hitherto unknown from Australia. On 2nd February, 1931, a second bird of the same species was received at the Museum from Mr. Ah Chee, of Derby, and would presumably have been found about the same time of the year as Mr. Spry's bird, namely about November, 1930. In a press statement, published in the *West Australian* newspaper of 25th February, 1931, Mr. Glauert could only account for the occurrences as being escaped cage-birds.

This has been the accepted view of Australian ornithologists since then (*e.g.* Whittell, 1943; Whittell and Serventy, 1948). Despite this, Mathews (1943) described the remains—the specimens were received in rather poor condition and had to be preserved as mummies—as a new Australian species, *Cervinipitta kimberleyensis*, but conceded that it might be a subspecies of *C. moluccensis*. On this authority Australia was admitted as being within the range of the Blue-winged Pitta by Delacour, 1947: 192.

In October, 1966, whilst returning from England, I was able to spend a few days with Dr. Ian Nisbet at Kuala Lumpur, Malaysia. Through the kindness of Dr. Nisbet and Lord Medway I accompanied bird-ringing teams at Fraser's Hill, some 70 miles distant from Kuala Lumpur. Fraser's

Hill is a resort in rain-forest at an altitude of 4,250 ft. The southward migration was well under way and mist-netting was carried on at an illuminated telecommunications tower. On misty nights large numbers of migrants are taken in the nets, ringed and released. Excellent conditions for these operations obtained on the nights of 22nd/23rd and 23rd/24th October. On the two evenings four individuals of the Blue-winged Pitta (*Pitta moluccensis*) were taken and, examining them, I was at once reminded of the Western Australian occurrences of almost 40 years previously.

Dr. Nisbet informed me of the wide migratory habits of the species in Malaysia. The species is a long distance migrant, and one which habitually gets into trouble whilst crossing the sea and then turns up in unexpected places. Thus it had been taken at lighthouses and even on ships on voyage. There are several references in the literature to its turning up at odd places. Robinson & Chasen (1939: 197) state that "in the autumn it arrives in great numbers from the north, and from October onwards it is very common as a bird of passage on the small islands in the Straits of Malacca". Madoc (1947: 126) states that "at lighthouses along our coasts (it is) a bird that is killed frequently on the lantern during autumn migration". Batchelor (1961) reports that his ship was invaded by a "large flock" of Blue-winged Pittas at 9 p.m. on 13th October, 1958, a few miles off Labuan, North Borneo. Jean Delacour informs me (*in litt.*, 4th September, 1967) that he found the Blue-winged Pitta to be a common migrant in southern Indo-China and the Straits of Malacca. On several occasions a number of individuals were caught by him on the ship during crossings in autumn and spring. He saw it several times in the gardens of Saigon in the winter. Smythies (1960) records *moluccensis* as a common winter visitor in Borneo. Gibson-Hill (1949: 146) summarises its status in Malaya as essentially a passage migrant.

In view of its migratory behaviour in Malaysia and neighbouring areas I now feel that the 1928 and 1930 records from northern Western Australia may be safely attributed to natural wanderings—an explanation already suggested by Dr. W. D. L. Ride, Director of the Western Australian Museum (in Serventy, 1958: 418).

Apparently the Malay Peninsula is the normal southern limit of the species' migratory range as it is not ordinarily found in Java (*cf.* Bartels and Stresemann, 1929), Timor (Mayr, 1944), or New Guinea (Rand and Gilliard, 1967).

The dimensions of 12 birds netted at Fraser's Hill, measured by Dr. Nisbet, and kindly provided by him, are as follows:

Wing, mean 126 mm. (ranging from 120–130 mm.); tail, 55 (47–60); tarsus, 41 (36–44); gape, 31 (30–33); weight, 76 gm. (63–82 gm.).

The lengths in the flesh of two specimens were 185 and 200 mm.

Colours of bare parts: iris, dark brown; bill, brownish-black, lighter on ridge and at base of lower mandible; legs, greyish-pink; inside of mouth, pink-flesh.

The two Western Australian specimens are now in such a dilapidated condition, due to the ravages of insects, that complete measurements are impossible. At the time of their receipt Mr. C. F. H. Jenkins made some measurements of the Derby specimen which are given below, with measurements made by myself later in brackets:

Total length, 210 mm.; tail, 50 mm. (53); tarsus, 41 mm. (41); exposed culmen, 27 mm. The tarsus in the Wallal specimen (the only dimension that can now be taken) is 43 mm. In both specimens the medial crown stripe is black. The Wallal bird had red under the vent, but this was lacking in the Derby bird. In general plumage colours (blue wings and buff-yellow underparts) they are very similar to the Fraser's Hill birds.

Nomenclaturally the form migrating through Malaya and believed to be visiting Australia has had varied treatment in the literature. When originally identified at the W.A. Museum by Glauert and Jenkins the Australian specimens were referred to as *Pitta megarhyncha*. Mathews suggested they were close to *Pitta moluccensis*. Delacour (1947) placed all the Blue-winged Pittas in the species *Pitta brachyura*, with the breeding residents of Malaya, Sumatra and Banka as the race *P. b. megarhyncha*, and the westerly migrants as *P. b. moluccensis*. A second migrant race, *P. b. nympha*, visits Borneo from north-eastern Asia and Japan. To this wide concept of *brachyura* Vaurie (1959: 1) adds the Australian *versicolor* as a subspecies.

Through the kindness of Professor Ernst Mayr, I have been able to peruse the draft of the treatment of these pittas in Peters' *Check-List of Birds of the World*, in which the bird under discussion is separated out as a full species—*Pitta moluccensis*. The distribution of the nominate race, *P. b. moluccensis* (in which Mathews' *kimberleyensis* is placed as a synonym) is given as: "Burma, from Arakan and Pegu south through Tenasserim, Peninsular Siam (Bandon, Trana). On migration and in winter to Malay Peninsula, Sumatra, Rhio Archipelago Banjak Islands, Nias, Mentawi Islands, Java, North Natuna Islands; Borneo." The Australian *P. versicolor* is retained as a separate species.

Pitta moluccensis moluccensis may now be added without reserve to the Australian list as an occasional migrant to the western part of northern Australia.

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* Actually the name used in the original identification was *megarhyncha*; the nomenclatural situation is briefly discussed at the end of this article.

Two African species pairs

by P. L. Britton

Received 1st August, 1968

Benson, Irwin & White (1959) discussed species pairs in the Rhodesias and Nyasaland (now Malawi, Rhodesia and Zambia). Only two of the many pairs mentioned there will be discussed in this paper.

Merops pusillus and *M. variegatus*. These two very similar species are sympatric in Angola, northern and western Zambia, and the southern Congo (Mackworth-Praed & Grant, 1962). Where sympatric, they differ ecologically in that *variegatus* is confined to wetter and more open country, in which *pusillus* is less frequent or absent (Benson, Irwin & White, 1959 ; Traylor, 1963).

It is worth mentioning the more detailed data now available for western Zambia. Benson (1962) could give no record of *variegatus* from the Barotse Province, but subsequently Benson (1964) has collected it north-east of Mongu (where common), and on the Matabele Plain, and Traylor (1965) has collected it at Lake Sihole. There is no definite record from the apparently very suitable Barotse Plain where Benson (1962) did, however, collect *pusillus* in typical *variegatus* habitat. *Pusillus* is widespread in the Barotse Province in its more normal habitat of bushes and rank grass, generally near water (Benson & White, 1957), as well as apparently occupying the Barotse Plain. My own experience is that the two species are ecologically segregated in the adjacent Balovale District of the North-Western Province. *Variegatus* is locally common in open permanently wet areas, without bushes or other cover, west of the Zambezi River and on the Zambezi flood-plain itself, but is otherwise probably absent. *Pusillus* is widespread and common in most wet areas where there is substantial cover, and locally so in a variety of dry wooded habitats. They occur within a few hundred yards of one another along both the Zambezi and South Kasiji Rivers.

It seems that *pusillus* and *variegatus* do not normally compete as they are segregated by habitat preference, but this does not appear to be the case on the Barotse Plain, where *pusillus* occupies habitat normally favoured by *variegatus*, yet *variegatus* occurs locally in similar habitat less than twenty miles away. In Rhodesia, where *variegatus* is absent, *pusillus* occupies all open or lightly wooded areas in the vicinity of water below 6,000 ft. (Smithers, Irwin & Paterson, 1957). Although *pusillus* and *variegatus* can most probably not co-exist, *variegatus* does appear in the field to be a larger, heavier bird. This apparent size difference was noted by Benson, Irwin & White (1959) who mentioned the need for verification by actual weighing, but they overlooked the data in Verheyen (1953). Weights and wing-lengths for both species are given in Table I.

The average weight of *variegatus* (21.3 gm.) is far larger than that of *pusillus* (14.1 gm.), whereas there is considerable overlap in wing-lengths. Most of the Rhodesia-Botswana *pusillus* are as large as, or larger than, the Upemba *variegatus*, but there is very little overlap in the wing-lengths of the two species at Upemba. This variation in the wing-length of *pusillus* will not be discussed here. The ratio, weight: wing-length was computed for all *variegatus* and for the 56 *pusillus* where individual wing-lengths

TABLE I

Weights and wing-lengths of the species pair, *Merops pusillus* and *M. variegatus*

MEROPS PUSILLUS

sex	*weight* (*gm.*)	*wing* (*mm.*)
(1) Upemba, southern Congo (Verheyen, 1953)		
12♀♀	11–17	71–80
7 ♂♂	8–15	73–79
(2) Northern Kenya (Irwin)		
2 ♂♂	14, 15	76, 79
(3) Matengo Highlands, southern Tanzania (Meise, 1937)		
5 unsexed	14–19	77–80
(4) Balovale, Zambia (Britton)		
8 unsexed	12.4–14.9	75–83
(5) Botswana (Irwin)		
4 ♀♀	12–17	82–84
♂	15	83
(6) Rhodesia (Irwin and Jackson)		
14 ♀♀	12.5–17.1	80–89
8 ♂♂	15–17.5	80–86
2 unsexed	13, 13	85–86

MEROPS VARIEGATUS

sex	*weight* (*gm.*)	*wing* (*mm.*)
Upemba (Verheyen, 1953)		
♂	20	82
♂	20	79
♂	21	83
♂	25	83
♀	21	80
♀	21	82
♀	21	84

were available. The averages of these ratios are 0.18 (*pusillus*) and 0.26 (*variegatus*); the difference between them is statistically very significant ($P < 0.001$). A *t*-test was used.

The weight difference, and more especially the weight: wing-length difference, between these two species indicates a sufficient size difference to enable them to co-exist, though the evidence available suggests that they do not.

Tchagra senegala and *T. australis*. These two similarly coloured species are sympatric through much of southern and eastern Africa (Mackworth-Praed & Grant, 1963). Benson, Irwin & White (1959) suggested that although they overlap widely they probably do not compete, as *senegala* is an altogether larger bird and they probably take different food. Brooke (1965) found them ecologically segregated in the Kafue National Park, Zambia with *senegala* largely if not entirely confined to *Brachystegia* woodland, irrespective of the height of the underlying grass, and *australis* largely if not entirely confined to thickets, and when in *Brachystegia*, only where there was a semi-thicket of underbrush. His remarks for *australis* were specifically restricted to *T. a. minor*. I did not find any obvious ecological segregation in the Balovale District where *australis* are intermediate between *T. a. souzae* and *T. a. rhodesiensis* (Benson & Irwin, 1967), but my records for *australis* are few. I found *senegala* widespread in all woodland with long grass, and one of the three nests which I found was in very thick regenerating *Cryptosepalum* scrub amongst *Burkea* woodland. My few records of *australis* are from slightly cleared *Brachystegia* and adjacent cassava lands, and I caught it twice in *Brachystegia* within a few yards of an occupied nest of *senegala*. White (1946) found *australis* much less common than *senegala* in the North-Western Province (which includes the Balovale District) and implied that *australis* prefers low growths of bushes whereas *senegala* is common in all woodland with long grass. The limited evidence available suggests that *senegala* and *australis* are ecologically segregated locally, but often co-exist. Weights and wing-lengths for both species are given in Table II.

TABLE II

Weights and wing-lengths of the species pair, *Tchagra senegala* and *T. australis*

TCHAGRA SENEGALA

sex	*weight* (*gm.*)	*wing* (*mm.*)
(1) Upemba (Verheyen, 1953)		
5 ♀♀	46–62	88–90
8 ♂♂	49–63	88–91
2 unsexed	55, 58	85, 88
(2) Matengo Highlands (Meise, 1937)		
8 unsexed	46–54	82–87
(3) Balovale (Britton)		
♂	54.5	89
3 unsexed	61–64	88–91
(4) Botswana (Irwin)		
♀	50	87
♂	52	89
(5) Rhodesia (Irwin and Jackson)		
4 ♀♀	44–54	89–92
3 ♂♂	54–56	89–92
1 unsexed	65	93
(6) Mozambique (Irwin)		
♀	54.3	89
♂	52	90

TCHAGRA AUSTRALIS

sex	*weight* (*gm.*)	*wing* (*mm.*)
(1) Matengo Highlands (Meise, 1937)		
2 ♀♀	34, 40	74, 75.5
(2) North-eastern Tanzania (Moreau, 1944)		
♀	32.8	—
(3) North-western Zambia (Britton and Payne)		
♀	32.7	73
4 unsexed	36.5–40.5	78.5–79
(4) Botswana (Irwin)		
2 ♀♀	29, 31	74, 75
6 ♂♂	30–35	74–80
(5) Rhodesia (Irwin and Jackson)		
7♀♀	29.5–34.6	73–79
12 ♂♂	30–38	73–78
(6) Mozambique (Irwin)		
♂	34.4	71

The difference in the average weight of *senegala* (53.1 gm.) and *australis* (33.3 gm.) is considerable for two species whose size difference, as based on wing measurements, is small (see, for example, McLachlan & Liversidge, 1957). The ratio, weight: wing-length was computed for the 29 *senegala* and the 34 *australis* where individual wing-lengths were available. The averages of these ratios are 0.63 (*senegala*) and 0.44 (*australis*); the difference between them is statistically very significant ($P < 0.001$). A *t*-test was used.

A size difference between these two species is very apparent both in life and in the museum skin (Irwin, pers. comm.), and though this difference is poorly reflected by standard measurement data it is obviously considerable, and hardly surprising in two so broadly sympatric, yet ecologically similar, species.

SUMMARY

The two African species pairs, *Merops pusillus* and *M. variegatus*, and *Tchagra senegala* and *T. australis* are discussed. The mutual ecology of the first pair in western Zambia is discussed, and it seems likely that they cannot co-exist there. *Variegatus* is larger than *pusillus*, and the difference between their weight: wing-length ratios suggest that they should be able to do so. The limited evidence available on the mutual ecology of the second pair suggests that although they are ecologically segregated locally, they often co-exist in apparent competition. As *senegala* is considerably larger than *australis* they presumably take different food and do not in fact compete. The difference between their weight: wing-length ratios is statistically very significant.

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Seasonal movement and variation in the southern populations of the Dusky Lark *Pinarocorys nigricans* (Sundevall)

by P. A. CLANCEY

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The Dusky Lark *Pinarocorys nigricans* (Sundevall) of Ethiopian Africa is a polytypic species of two spatially remote races: *P.n. nigricans* (Sundevall), 1850: Aapies R., Pretoria, Transvaal, and *P.n. erythropygia* (Strickland), 1850: Kordofan, Sudan. The northern race, *P.n. erythropygia* differs from the southern one in having the rump and upper tail-coverts ochraceous-tawny, and the outer tail-feathers and the bases of the others dull tawny. While often treated as discrete species, it is convenient to consider them as well-marked races of but a single species. Both races appear to have a closely similar post-breeding movement pattern, *i.e.*, breeding in the dry season in heavily wooded savanna, then moving north or south as the case may be with the onset of the main rains into drier and more open habitats.

In the southern *P.n. nigricans*, the precise breeding range and nature of its post-breeding movements have long been problems of great moment to students of Ethiopian birds. Chapin (1953) was one of the first workers to postulate that the form bred in the north of its range in a narrow belt from the central and northern districts of Angola, eastwards through the southern Congo and adjacent north Zambia to Tanzania, æstivating south of this to central South-West Africa, northern and eastern Botswana, the Transvaal, southern Moçambique and Zululand. Chapin was followed by White (1959) and Benson (1959), but Winterbottom (1957) considered *P.n. nigricans* to breed in the southern parts of its range, spending the off-season to the northward, *i.e.*, the very reverse of what Chapin deduced from a study of museum specimen data, in so doing following Roberts (1940). Clancey (1964) followed Winterbottom in considering that the species bred in South Africa, ranging later north to the Congo. Smithers *et al.* (1959), rejected the Rhodesian breeding records as given in their *Check List* (Smithers *et al.* [1957]) in the light of Winterbottom's note, thus leaving only one record of breeding of *P.n. nigricans* for the South African Sub-Region, namely that of Bell-Marley of a nest on the Mkuzi Flats, Zululand, on 22nd September, 1933 (see Roberts [1940]).

Data culled from specimen material recently assembled in the Durban Museum show almost conclusively that Chapin, with his usual perspicacity, was correct in assuming that *P.n. nigricans* breeds in the north of its range in the dry season (June–November), ranging far to the southward between December and May. This shows up clearly on the accompanying Table. While in the south of the range, all birds, juveniles and adults alike, undergo a complete moult of the body plumage and the wing- and tail-feathers, mainly between January and April. Some juveniles are still in transitional moult into first-winter or pre-basic dress in late May.

TABLE

Territory	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	*Remarks*
					P. n. nigricans								
Zambia				3	14	1		2	5		2	1	Apr. specimens from south.
Rhodesia		2		6	8						1		Feb. and Nov. birds juvs.
Botswana	1	1	1										
Transvaal	1	2		1								1	Dec. specimen dated 29th.
Sul do Save, P.E.A.		10	15	6	1								One from Beira dated 24th Mar.
					P. n. occidentis								
Angola				1		8		3	2				Apr. specimen from S. Huila.
Zambia					2								Livingstone specimens.
Rhodesia	1	1	1	3	1								
Botswana	2	1	2	1									
S.W. Africa	2	4	1		1							1	Dec. specimen dated 17th. Worn ad. commencing moult.
Sul do Save, P.E.A.		3											

Disposition by months of all specimens of *P. nigricans* examined. Note concentration of records from the north of the range of either race between June–November.

Study of birds from the breeding grounds in Angola and northern Zambia indicates the presence of quite well-marked variation within the present taxon *P.n. nigricans*, in that birds breeding in Angola, and, perhaps, the Kwango district and Kasai of the Congo, differ from those from further east in having the breast spotting smaller and less extensively distributed. From examination of material from the South African Sub-Region it appears that birds of the lightly spotted populations æstivate in the main to the west of those with heavy breast spotting. That the present *P.n. nigricans* is divisible into two races on the breast spotting character was first postulated by Irwin, *in litt*. Irwin believed that one of the forms was a true migrant, moving north and south between its breeding and æstival ranges, while the other was a locally nomadic one. The evidence now assembled suggests that both lightly and heavily spotted forms breed in the north of the southern sector of the species' disjunct range, the former in the west and the other to the eastward, both spending the off-season well south of the breeding grounds. The two forms also appear to be largely allohiemal.

I believe that the weight of evidence now favours, following Irwin's unpublished findings, the recognition of two races in the southern complex of populations, one of which will require a name. The southern populations of the Dusky Lark are now arranged in two subspecies as follows:

(a) **Pinarocorys nigricans nigricans** (Sundevall)

Alauda nigricans Sundevall, *Oefv.K.Sv.Vet.-Akad.Förhandl.*, vol. vii, 1850, p. 99: Caffraria superiore, the *Type* from the Aapies (Ape) R., Pretoria district, Transvaal.

♂. Upper-parts Fuscous (Ridgway [1912]), the feathers narrowly fringed with buffish white. Face boldly patterned or brindled in fuscous and buffy white. Below off-white, the breast heavily striated with black streak-like spots.

♀. Usually a little more brownish, less black above than the male. Facial pattern less bold. On under-parts more buffy white, the ground to the breast pale vinaceous buff, the striations more brownish black. First-winter ♂ and ♀ resemble the adult ♀. Wear results in a loss of the pale fringing to upper-parts, wings and tail.

Wings of 10 adult ♂♂ 118–126 (120.8), of 10 ♀♀ 112–117 (113.7) mm.

Material: 85. [Zambia, 28 (Salujinga, Fort Rosebery, Kawambwa, Livingstone, etc.); Rhodesia, 17; Botswana (Bechuanaland Protectorate), 3; Transvaal, 5; Sul do Save, Moçambique, 32 (mainly Lourenço Marques)].

Range: Breeds in the Miombo of the Katanga, Congo, and northern Zambia, eastwards to western Tanzania, spending the off-season mainly in eastern Botswana, Rhodesia, the Transvaal, Swaziland, southern Moçambique, and eastern Zululand. On breeding grounds present from about June–November, but birds move in throughout May, and some are still present in December. Judging by the long series from Lourenço Marques, present in numbers at the southern extremity of the non-breeding range from February–April, when birds undergo a complete moult. Birds leave the northern breeding grounds in December, moving south in leisurely fashion in parties of varying proportions.

Remarks: As noted above, Smithers *et al.* (1959), have rejected the

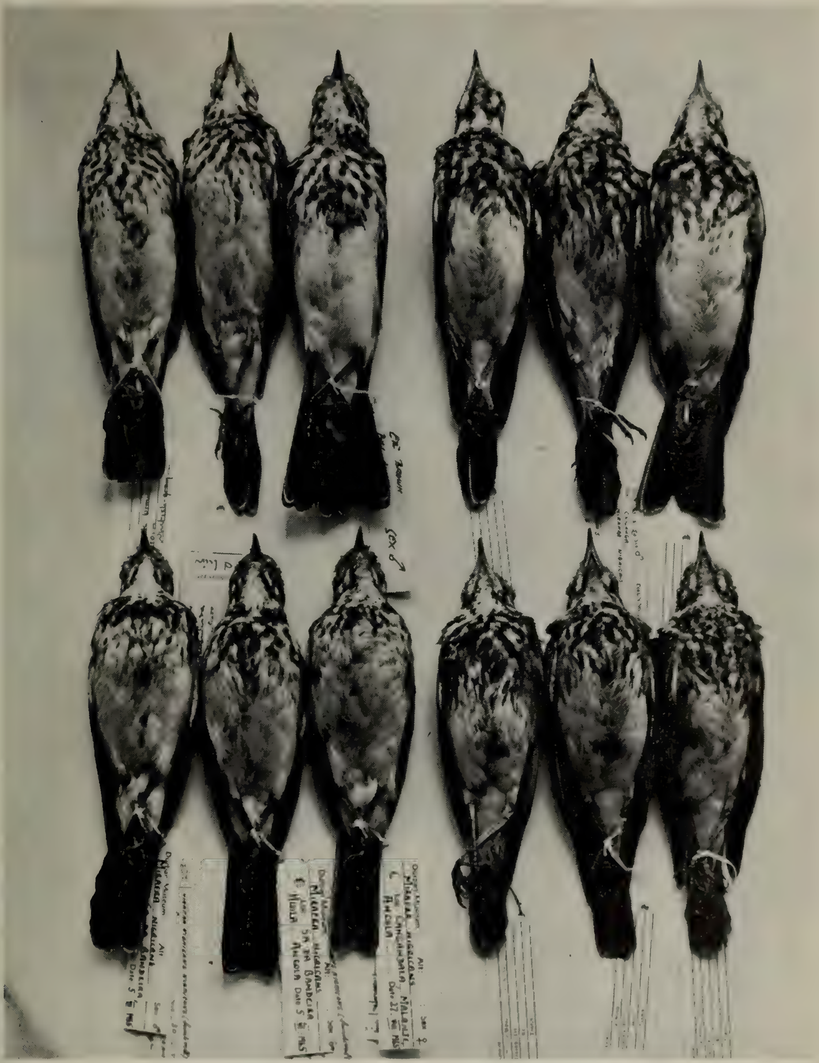


Photo: Dennis Cleaver

Ventral view of specimens of the two southern races of the Dusky Lark *Pinarocorys nigricans*.

Upper row: left *P. n. occidentis*, right *P. n. nigricans*. Specimens in freshly moulted condition.

Lower row: As in upper row, but specimens in moderately worn condition. Note finer breast spotting in *occidentis*.

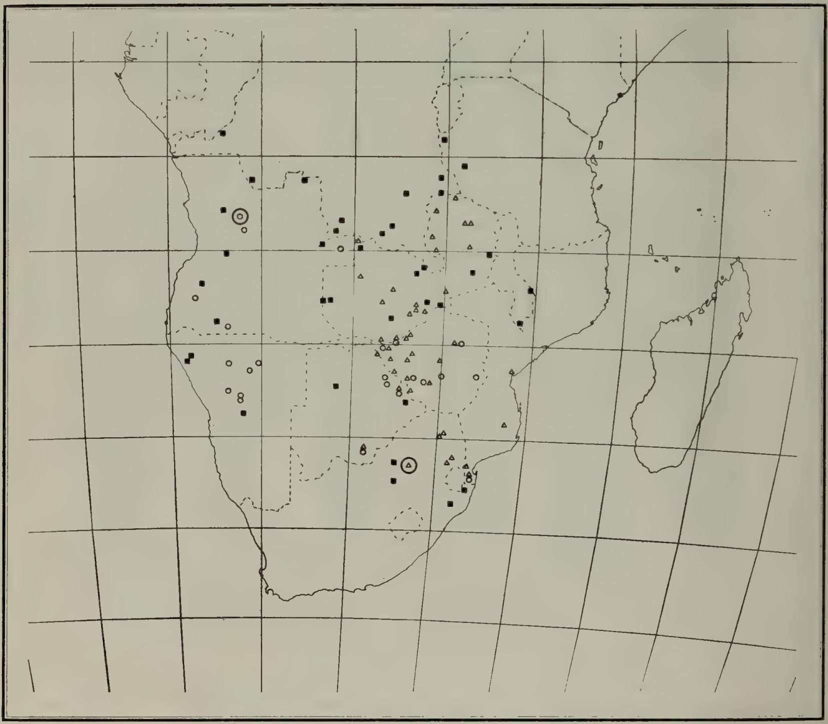
Rhodesian breeding records. The validity of the Mkuzi Flats, Zululand, record (Roberts [1940]) is now highly equivocal. The date (September) is satisfactory, but the breeding of this lark in Zululand, at the most southern tip of its known range, must be quite exceptional.

Sundevall's *Alauda nigricans* was based on a specimen taken by Wahlberg on its summering grounds in the Transvaal. As all the Transvaal specimens handled by me have been of the heavily streaked eastern race, I group such populations under this trinomen.

This lark must prove difficult to sex by gonad examination judging by the large number of wrongly sexed specimens in collections. Benson (1959) suspected this to be the case. Males far outnumber females in all series examined.

(b) **Pinarocorys nigricans occidentis,** subsp. nov.

Description: Similar to *P.n. nigricans* as described above, but with spotting over the breast greatly reduced in size and distribution. With the



Map showing the distribution of the Dusky Lark in the southern half of Africa. Closed symbols represent records from the literature; open symbols indicate localities of specimens examined and determined as to subspecies.

■ from the literature

○ *Pinarocorys nigricans occidentis*

△ *Pinarocorys nigricans nigricans*

reduction in size of each individual spot, the overall effect is one of mottling rather than bold striation (see photo).

Similar in size.

Material: 41. Angola, 14 (Sá da Bandeira and Vila d'Eca, Huila; Cazombo, Moxico; Cangandala and Mulundo, Malanje); Zambia, 2 (Livingstone); Rhodesia, 7; Botswana, 6 (Nata, Francistown, W. of Kanye); South-West Africa, 9 (Okahandja, Okanjande, Omaruru, Tsumeb, Okaukuejo); Moçambique, 3 (Lourenço Marques).

Type: ♀, adult. Breeding. Cangandala, Malanje, Angola (9° 44′ S., 16° 33′ E.). 27th August, 1965. Collected by F. Nobrega; *ex* coll. Instituto de Investigação Cientifica de Angola, Sá da Bandeira. In the collection of the Durban Museum. D.M.Reg. No. 23112.

Range: Breeds in central and northern Angola, and perhaps the Kwango and Kasai regions of the Congo. Post-breeding movements take present race south mainly to South-West Africa, northern and eastern Botswana, and western Rhodesia. Obtained also Sul do Save, Moçambique (February, 1953).

Measurements of the Type: Wing (flattened) 119, culmen from base 20, tarsus 30, tail 77 mm. Weight 44 gm.

Remarks: This race, with reduced spotting to the breast, appears to be almost entirely a dry country form. It breeds during the dry season in the north of its range, æstivating mainly in the South West Arid District, whereas nominate *P. nigricans* does so in more mesic regions of south-eastern Africa, this reflected in the assumption of heavier breast streaking.

Acknowledgments

126 specimens of the Dusky Lark were examined in furtherance of this study. To augment the small Durban Museum series, specimens were borrowed from the South African Museum, Cape Town, the Transvaal Museum, Pretoria, the Museu Dr. Alvaro de Castro, Lourenço Marques, the National Museum of Rhodesia, Bulawayo, and the Instituto de Investigação Cientifica de Angola, Sá da Bandeira.

To those responsible for organising the loans I tender my sincere thanks. I am also grateful to Mr. M. P. Stuart Irwin for extracts from an unpublished manuscript, in which the breakdown of *P.n. nigricans* was adumbrated.

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On the name of a race of *Buphagus erythrorhynchus* (Stanley)

by P. A. Clancey

Received 24th April, 1967

In most recent discussions in the periodic literature on the subspecies of the Red-billed Oxpecker *Buphagus erythrorhynchus* (Stanley) of Ethiopian Africa, the name *Buphagus erythrorhynchus caffer* Grote, 1927: Palala R., border of Waterberg and Potgietersrus districts, Transvaal, has been used for the populations which range from the Republic of South Africa, northwards through the interior of the continent to northern Tanzania and Kenya. The fact that *caffer* is antedated by the much earlier *Buphaga Africanoides* A. Smith, 1831: Natal (*vide South African Quarterly Journal*, No. V, October, 1831, p. 12) seems to have been overlooked hitherto by workers.

There is no doubt that Smith's *B. Africanoides* is correctly applied to this species of oxpecker, as the original description is diagnostic. The bill is described as being between crimson and scarlet in colour, the legs and toes as black, and the eye-wattles as yellow. Smith comments that it "inhabits the country about Natal, and is commonly seen picking insects from the backs of cattle".

The present race *B. e. caffer*, as defined in the recent revisions of the races of the Red-billed Oxpecker by Clancey and Lawson, in *Bull. B.O.C.*, vol. lxxxi, 7, 1961, pp. 128–131, and Clancey, *Bull. B.O.C.*, vol. lxxxii, 1, 1962, pp. 19, 20, now becomes *B. e. africanoides* Smith, 1831: Natal, with *B. e. caffer* Grote, 1927: described from the Transvaal placed as a straight synonym.

When Smith visited Natal in the early part of last century the Red-billed Oxpecker was an abundant resident species feeding on the dermal parasites and lymph of both game animals and domestic stock. Elimination of the game and the regular dipping of stock animals have altered all that, and today the species is very local and uncommon in the province to the south of the Tugela R., which region constitutes the "Natal" of Smith's time.

CONTRIBUTORS

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